

# 1

## Introduction

In both scholarly narratives and popular histories, the dynamics of the global economy are portrayed in terms of the rise and fall of great powers.<sup>1</sup> The economic historian Angus Maddison, in his influential synthesis, characterized the dynamics of global growth in terms of the gap between the technological leader and its followers. The identity of the lead country may change, but technical progress in the leader always defines the limits of the possible. The task for other countries is not to expand that frontier but to follow the leader and close the technology gap.<sup>2</sup> Charles Kindleberger emphasized stability as well as growth, but like Maddison, he described global dynamics in terms of the changing identity but unchanging importance of the lead economy. In Kindleberger's analysis, only the leading power had the capacity to stabilize the international system. It was therefore in periods of transition, when economic leadership passed from one country to another, that risks to stability were greatest.<sup>3</sup>

More concretely, these stories are told in terms of British hegemony in the nineteenth century, when Great Britain as the first industrial nation defined the technological frontier, and the country helped stabilize the global system by lending countercyclically—exporting capital when other economies suffered downturns—and

by maintaining an open market for the goods of distressed foreign producers. They are told in terms of American hegemony in the twentieth century, when the power of the United States was effectively institutionalized in what is sometimes referred to as the Bretton Woods–GATT System.<sup>4</sup> Extrapolating into the future, they will be told in terms of Chinese hegemony in the twenty-first.

Monetary historians view the same history through the lens of currencies. The nineteenth-century international economy—the era of the international gold standard, also sometimes called “the first age of financial globalization”—was dominated by the pound sterling. The Bank of England, its issuer, was conductor of the international orchestra.<sup>5</sup> Britain’s status as leading foreign lender and home to the world’s deepest financial markets gave its central bank unmatched influence over the operation of the international monetary and financial system. Britain’s colonial trade, with India in particular, cushioned its balance of payments and eased adjustment in international financial markets.

Sterling, it is said, had no consequential rivals as an international and reserve currency in this period. London had no equals as an international financial center. The Bank of England had more influence over capital flows, exchange rates, and related financial matters than did any other central bank.

Paralleling these narratives of British economic and financial dominance in the nineteenth century, analogous stories are told about the twentieth-century international economy, or at least the international economy of the second half of the century. Once the torch of leadership was passed, international monetary and financial relations were dominated by the United States and the U.S. dollar. The dollar was the only freely available and widely accepted national currency in the Bretton Woods international monetary system, under which the greenback was pegged to gold while other currencies were effectively pegged to the dollar. Only the United States possessed deep and liquid financial markets on which its currency could be freely bought and sold and used by traders around the world, together with the economic, financial, and military strength to guarantee that its markets would remain open to other countries.

Moreover, what was true in the third quarter of the twentieth century—the heyday of Bretton Woods—was still true in the fourth, even though the Bretton Woods par value system was no more. Through the end of the twentieth century and longer, the dollar remained the dominant international and reserve currency. International monetary economists like Milton Gilbert and Ronald McKinnon referred to the monetary arrangements of the third and fourth quarters of the twentieth century, revealingly, not as the Bretton Woods and post-Bretton Woods periods but as the era of the “gold-dollar system” and the “dollar standard,” respectively.<sup>6</sup>

The dominance of the dollar gave the Federal Reserve System singular leverage over global financial conditions. That leverage evidently persists to this day, as reflected in the close attention paid to the impact of Fed policy on international financial conditions and the complaints of policy makers about the implications for their countries of U.S. monetary easing and tightening.<sup>7</sup>

Looking to the future, the same stories of political, economic, and monetary dominance are now told in terms of Chinese hegemony. The twenty-first century global economy, it is suggested, will be organized around the Chinese renminbi and regulated by the People’s Bank of China. China’s immensely large population all but guarantees that the country will overtake the United States as the single largest economy, just as the U.S. overtook Britain in the late nineteenth century.<sup>8</sup> The renminbi will then overtake the dollar as the dominant international currency, for the same reasons that the dollar overtook sterling. Or so it is said by those who foresee this as the Chinese century, much as its predecessor was the American century.<sup>9</sup>

### **The Traditional View**

This traditional view, that economic dominance and monetary dominance go together, flows from models with strong network externalities, so that first-mover advantage matters, and when those externalities are sufficiently powerful that the result is “winner takes all.”<sup>10</sup> In these models, it pays when transacting across borders to use the same currency used by others transacting across borders.

Network returns are strongly increasing, in other words. Expressing the price of one's exports in the same currency as other exporters enables customers to easily compare prices and facilitates the efforts of entrants to break into international markets. Since intermediate inputs, when sourced from abroad, will similarly be priced and invoiced in the dominant international currency, a firm will prefer to express the prices of its exports in that same currency, thus preventing its costs from fluctuating relative to its revenues when the exchange rate changes.

Likewise, denominating one's debt securities in the same currency as other issuers enables investors to readily compare returns and makes it easier for new issuers to secure loans on international capital markets. Borrowing costs will be lowest in the deepest and most liquid financial market, which possesses its depth and liquidity because it is the market to which importers and exporters turn for trade finance. The country with the deepest and most liquid financial market will similarly be attractive as a place for investors from other countries to hold their foreign balances, since investors value the ability to buy and sell without moving prices. Thus, not only private investors seeking to diversify their portfolios but also central banks and governments, when deciding on the composition of their foreign reserves, will be drawn to the currency of the country with the deepest and most liquid financial markets—in other words, the same currency to which other investors are drawn.

For all these reasons, a single national unit will tend to dominate as the international unit of account, means of payment, and store of value. When those network increasing returns are sufficiently strong, international currency status will resemble a natural monopoly. There will be room in the world for only one true international currency. In the past this was sterling. Now it is the U.S. dollar. In the future it will be the renminbi.

These models imply, further, that the currency of the country that is the leading commercial and financial power is the natural candidate for this dominant status. As a large economy, it will have extensive international trade and financial links. It will have well-developed financial markets. Its residents being accustomed

to transacting in their own currency, its national unit will have a relatively large “installed base,” in the language of network economics.<sup>11</sup> Exporters and investors in other countries will consequently be drawn to the currency in question for transactions with residents of the lead economy. The currency of the leading economic power will thus have an intrinsic advantage in the competition for international currency status. This plausibly explains how sterling emerged as a global currency in the nineteenth century and how the dollar assumed this position in the twentieth.<sup>12</sup>

Models with network effects can also be models in which persistence is strong. In the limit, there may be “lock-in”—once an arrangement is in place, it will persist indefinitely.<sup>13</sup> Once market participants have settled on a technology—in this context, on a monetary and financial technology (call it an international currency)—they will have no incentive to contemplate alternatives. Transacting using a different technology or platform not also used by members of one’s network will be prohibitively costly. In the international monetary and financial sphere, currencies other than the dominant unit will not possess the same attractions for individuals, banks, firms, and governments engaged in cross-border transactions. The prices of goods and financial instruments invoiced in other currencies will not be as easily compared. Settlements will not be as predictable. Investments will not be as liquid. Other currencies will not possess the same transparency, predictability, and liquidity, precisely because they are not the currencies that dominate international transactions. And since individuals, banks, firms, and governments make decisions in a decentralized fashion, there will be no mechanism for coordinating a large-scale shift from one international monetary and financial standard to another.<sup>14</sup>

It follows that international currency status will display inertia. It will persist even after the conditions making for the emergence and dominance of a particular national unit no longer prevail to the same extent. That currency will remain locked in unless a significant shock causes agents to abandon established practice and coordinate a shift from one equilibrium (from the common use of one international currency) to another. This explains, it is said, why sterling remained

the dominant international currency well into the twentieth century, long after Great Britain had been surpassed in economic size and financial power by the United States. It explains why the shock of World War II was required for sterling to finally be supplanted by the dollar. These conjectures have obvious implications for how long the dollar is likely to remain the dominant international currency and what kind of shocks may be required for it to be supplanted by the renminbi.

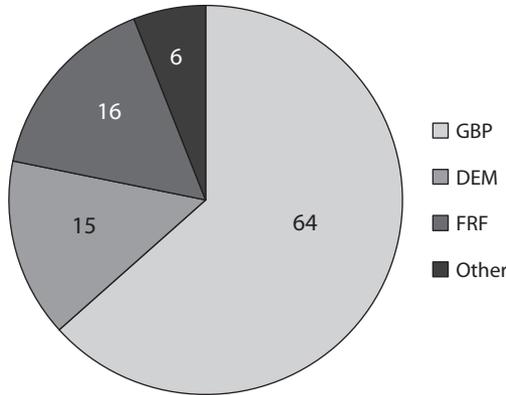
### **The New View**

This traditional view of international currency status is based more on theory than evidence.<sup>15</sup> At most, the theoretical models in question merely allude to historical facts as a way of providing motivation, rather than engaging seriously with the evidence. And even scholars who treat the evidence seriously are hampered by the limits of the available empirical base.

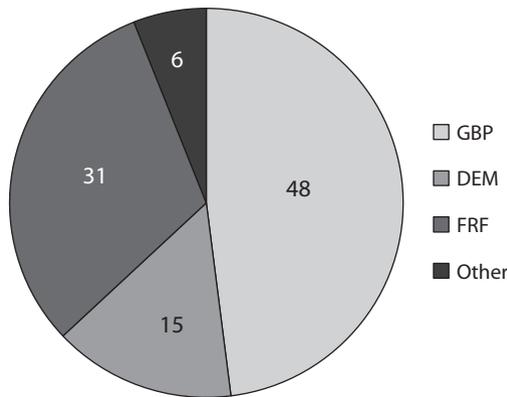
Consider the currency composition of foreign exchange reserves. We know something about this in 1899 and 1913, courtesy of the pioneering estimates of Peter Lindert.<sup>16</sup> We then know something about it starting in the 1970s, courtesy of the IMF and its Currency Composition of Official Foreign Exchange Reserves (COFER) database.<sup>17</sup> But we know little about the periods before or between.

These are thin empirical reeds on which to hang an encompassing narrative. Moreover, the traditional narrative is hard to square with even this limited evidentiary base. For the final decades of the twentieth century, the IMF's data confirm that the dollar accounts for the single largest share of identified foreign exchange reserves, but that this share is only on the order of 60 percent. Other currencies also played consequential international roles, in would appear.

Neither do Lindert's data support the assertion that international currency status is a natural monopoly. In fact they show other currencies in addition to sterling—the German mark and the French franc—also accounting for non-negligible shares of central bank reserves in 1899 and 1913.<sup>18</sup> (See Figures 1.1 and 1.2.)



**FIGURE 1.1.** Shares of Currencies in Known Reserves, 1899 (percent).  
*Source:* Lindert (1969).  
*Note:* DEM, German mark; FRF, French franc; GBP, British pound.



**FIGURE 1.2.** Shares of Currencies in Known Reserves, 1913 (percent).  
*Source:* Lindert (1969).  
*Note:* DEM, German mark; FRF, French franc; GBP, British pound.

New evidence on the period between 1913 (when Lindert’s analysis ends) and the early 1970s (when the IMF’s picks up) is equally hard to reconcile with the traditional view. Sterling, rather than remaining the preeminent international currency after World War I, in fact already shared that status with the dollar in the 1920s,

suggesting that multiple international currencies can coexist. The dollar's rise was rapid, at odds with the presumption that persistence is strong. Beginning in 1913, the greenback went from being used hardly at all in the international monetary domain to being a coequal with the pound barely 10 years later.

All this leads us to challenge the conventional wisdom. We argue for replacing the traditional (or "old") view of international currencies with a "new" view, in which several national currencies can play consequential international roles and in which inertia and persistence are not as strong as traditionally supposed.<sup>19</sup>

This new view has a basis in theory as well. It builds on a literature on technology standards that emphasizes open systems, in which users of a particular technology or system can interact with those using other technologies or systems.<sup>20</sup> Network effects still exist, but the technical barriers between competing systems can be surmounted by so-called gateway technologies that enable suppliers or customers to overcome pre-existing incompatibilities and integrate rival systems into "an enlarged production system or extended network."<sup>21</sup> In the presence of these gateway technologies, interchangeability costs are no longer so high. Network increasing returns associated with the use of a particular technological system or standard are no longer as pronounced. First-mover advantage and the persistence of the established, dominant standard are no longer so strong.<sup>22</sup>

There is an analogy here between international currencies and operating systems for personal computers. Once upon a time, exchanging information across operating systems or platforms was costly and difficult. When buying a personal computer, it paid to buy one with the same operating system used by one's friends and colleagues. Network increasing returns were strongly increasing. Interchangeability costs (the costs of transferring data across platforms) were high. In the 1980s, Microsoft Word came in two versions. While one was compatible with the Apple Macintosh and the other was compatible with the IBM PC, the two were incompatible with each other. Switching costs (and hence the costs of experimenting with alternative platforms) were prohibitive, since one's existing

files, generated for use with one system, were incompatible with the other. Everyone used Microsoft's disk-operating system (MS-DOS, which eventually morphed into Windows), because everyone else used it. Alternatives were for hobbyists, not for researchers or businesspeople.

With time, however, software engineers learned how to more easily move data across platforms. Interchangeability costs were cut. Software developers incorporated "translators" into updates of existing word-processing software and published new packages whose files were fully compatible across platforms. As a result, switching costs fell, and network increasing returns became less pronounced. Multiple operating systems, such as Microsoft Windows, Apple Mac OS X, and Linux, were now able to coexist in personal-computer space—making it possible for coauthors with personal computers running different operating systems to collaborate on this book.

For the modern-day foreign exchange market, this twenty-first-century picture of low costs of information, transactions, and coordination is clearly more plausible than the traditional assumption of high switching costs and costly information. In the age of high-speed communications, it is straightforward for potential customers to get real-time quotes on the price of foreign exchange and compare the prices of commodities denominated in different currencies. When more than half of all foreign exchange transactions occur on electronic platforms, it is possible to purchase and sell multiple currencies at microscopic bid-ask spreads in a matter of milliseconds. This is true not only for high-speed traders utilizing Thomson-Reuters servers and for large financial institutions with interbank electronic platforms, but also for retail investors with access to Internet-based foreign-exchange gateway technologies like Oanda and World First.

Likewise, it is now possible for a firm to obtain protection from future exchange rate changes that might otherwise distort its costs and revenues by purchasing and selling currency forwards, swaps, and other foreign exchange derivatives—transactions that can be undertaken at low cost on high-tech twenty-first-century financial markets. Hence the need for a firm to price its exports in the same currency in which its imported inputs are invoiced is no longer as

pressing as before. And as more countries open the capital accounts of their balance of payments, more national markets acquire the depth and liquidity necessary to render assets traded there attractive to international investors.

For all these reasons, it is increasingly difficult to sustain the traditional argument that the currency of the leading economy, in which the majority of international transactions are concentrated, possesses such a pronounced advantage in terms of liquidity and transactions costs as to acquire natural monopoly status.<sup>23</sup>

More surprisingly, what is true for twenty-first-century foreign exchange market turns out to be true as well for nineteenth- and early twentieth-century currency markets, as new evidence and analysis suggest. In recent work, Marc Flandreau and Clemens Jobst develop a theoretical model of the international monetary system along the lines of the open-systems literature described above.<sup>24</sup> They apply it to the pre-1914 era to investigate whether the conditions were present for natural monopoly and lock-in or whether, instead, several widely traded international currencies could coexist and the identity or identities of the leading currencies could change. Their analysis highlights the need to distinguish network effects giving rise to a degree of persistence from very strong externalities giving rise to lock-in and natural-monopoly effects.<sup>25</sup> In the absence of those very strong externalities, of the network variety or other, international currency status will still display inertia. But several international currencies can coexist, and they can come and go.

Flandreau and Jobst's empirical estimates of network effects in pre-1914 international money markets support the view that these externalities mattered but reject the hypothesis that they were so strong as to produce lock-in and winner-takes-all effects. This helps us understand the coexistence of several international financial centers and the use of several key currencies in nineteenth-century foreign exchange and money markets. Flandreau and Jobst's analysis of the foreign exchange and money markets before World War I shows there were in fact three main international currencies against which other currencies were traded. Evidently, the financial-engineering expertise needed to create a reasonably open financial system, in

which multiple international currencies or standards could coexist, was not beyond the capacity of nineteenth-century financiers.

Thus, where the old view suggested that network increasing returns are so strong that only one true global currency can exist at any point in time, the new view suggests that increasing returns are not so strong as to rule out a role for several currencies. Where the old view found support in the dollar's dominance in the second half of the twentieth century, the new view finds support in other periods during which several currencies simultaneously played consequential international roles. The old view implied that the dollar's dominance might persist for an extended period, whereas the new view predicts that the dollar will have rivals sooner rather than later.

### **Why It Matters**

The idea that a particular national currency can continue to dominate international transactions even after the issuer has lost its economic, fiscal, and political might has uncomfortable implications. Marcello de Cecco has emphasized the relative economic decline of Britain before 1913 together with the continued dependence of the world economy on a sterling-centered system as factors in the financial tensions and imbalances leading up to World War I.<sup>26</sup> With other countries now growing more rapidly than the more mature British economy, the British market was no longer large enough to accommodate the distress goods of other countries. British lending, countercyclical or otherwise, no longer sufficed to stabilize monetary and financial conditions worldwide. The Bank of England no longer possessed the financial leverage needed to conduct the international orchestra.<sup>27</sup>

Similarly, in his account of the 1930s, Charles Kindleberger blamed the onset of the Great Depression on the continued dependence of the world economy on sterling and London after the conditions leading to their preeminence had passed and Britain had lost its capacity to stabilize the international system. Still others link the global imbalances of the early twenty-first century and the financial crisis that followed to the world's reliance for international liquidity

on a United States that accounted for a declining share of an expanding global economy. The United States therefore possessed a diminished capacity to provide safe and liquid assets on the requisite scale, leading it to substitute subprime-mortgage-linked securities, whose stability and liquidity turned out to be less than met the eye.<sup>28</sup> This is one way of understanding the chronic fragility of the international monetary system and the instability of global finance, phenomena that have long troubled historians and policy makers.

In contrast, the idea that there can be several consequential international currencies and several sources of international liquidity at a point in time suggests the possibility of a better match between the structure of the global economy and its international monetary and financial system. If international currency status is not a natural monopoly in which strongly increasing returns produce lock-in, then other countries need not depend exclusively for their liquidity needs on a relatively mature, slowly growing economy in relative decline. The twenty-first-century version of the Triffin Dilemma—in which that relatively mature, slowly growing country by itself cannot continue indefinitely to meet the global economy's liquidity needs—can be resolved through the development of other national sources of international liquidity.<sup>29</sup> For countercyclical and emergency lending, the world need not rely on the judgment and goodwill of one central bank and one national government alone. If the central bank that is traditionally the source of emergency liquidity assistance to other countries refuses for domestic political reasons to again come to their aid, then others with the wherewithal can step in.

Contrary to this view of the stability of a global system with several consequential international currencies is the fear that the exchange rates among the currencies in question will become dangerously volatile and unstable. The existence of several liquid markets will enable central banks and other investors to rapidly rebalance their portfolios. They will be able to dump one of the currencies comprising their stock of foreign assets at the first sign of trouble, since they will have alternatives into which to shift. Small shocks or even minor bits of news may then cause sharp changes in the exchange rates between the currencies of the major countries, creating problems

for their economies and for the smaller countries with which they have economic ties. Whether this is a real and pressing danger, and under what circumstances, are presumably questions on which history can shed light.

Finally, which of the two views is more accurate has implications for the benefits (sometimes known as the “exorbitant privilege”) accruing to the issuer of the international currency or currencies. When a national currency is used widely in cross-border transactions, demand for it is apt to be stronger than otherwise. The issuer will be able to place debt securities denominated in that currency at a lower cost; as a result, the cost to it of financing budget and current account deficits will be less. The issuer also enjoys a kind of automatic insurance: when a serious negative shock hits the world economy, investors will rush into its financial markets, since there is nothing that they value more than liquidity in a crisis. This tendency was evident in 2007–2008, when investors rushed into the dollar, which strengthened against other currencies, even though the United States itself was the source of the subprime crisis and then the Lehman Brothers shock.

But if multiple international currencies can exist simultaneously, any such benefits will be more widely shared. These will not accrue to just one country, the United States, the situation that led French officials responsible for the phrase to characterize that privilege as “exorbitant.”<sup>30</sup>

## **What We Do**

We start in Chapter 2 by sketching the background to our story, describing the origins of the practice of holding foreign balances (bank deposits and securities denominated in a foreign currency and held in a foreign financial center) by firms, banks, and governments. This enables us to describe the contours of the international monetary and financial system from the late nineteenth century to the eve of World War I. Chapter 3 then tells the next installment of the story, which extends from the outbreak of the war to the early 1920s (and from the Jekyll Island meeting in 1910 that paved the

way for founding the Federal Reserve and the subsequent process of dollar internationalization) to the Genoa Conference in 1922, at which it was agreed to move to a foreign-exchange-based monetary and financial system.

Chapters 4 through 6 then present new evidence for reserve currencies in the 1920s and 1930s, for the use of currencies in trade finance in this same period, and for the use of currencies as vehicles of long-term international investment. This is where we present our central evidence for the “new view.”

Chapters 7 through 11 bring the tale up to date. Chapter 7 describes changes in the relative importance of different national currencies as international reserves from the end of World War II through the beginning of the twenty-first century. It also provides evidence on the changing importance of network increasing returns, other sources of persistence (such as custom and tradition), and the policies of the reserve-currency-issuing countries. Chapters 8 and 9 then turn to a pair of cases with the capacity to shed light on the future. Chapter 8 focuses on sterling balances in the aftermath of World War II and the efforts of the British authorities to manage an international currency in decline. Chapter 9 considers the abortive rise of the yen as an international currency. It looks at the attempts of the Japanese authorities to internationalize their currency and discusses why these efforts proved unsuccessful.

These two case studies speak to the question of whether the euro area and China will succeed in internationalizing their currencies and whether the euro and renminbi are likely to emerge as consequential rivals to the dollar. They raise the question of what history can tell us about the prerequisites for currency internationalization, and how the United States should respond to the emergence of a rival and how it should conceivably manage the loss of dollar dominance. We consider these issues in Chapters 10 and 11, which look respectively at the euro and renminbi’s prospects as international currencies.

Chapter 12, in concluding, considers the broader implications for the dollar and the world economy.

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In what follows, we use a combination of historical and statistical—some would say narrative and econometric—evidence. Economic theory structures and informs our analysis, as will be evident from this chapter. But we present that theory verbally rather than laying it out in gory detail in order to make the analysis accessible to the widest possible audience.<sup>31</sup> We are also aware of the limits of the evidence, which prevent us from drawing some conclusions as firmly as others. For example, in seeking to show that multiple international currencies can coexist, we can invoke evidence from a variety of different periods and international monetary regimes: the gold standard, the interwar gold-exchange standard, the Bretton Woods period, and the post-Bretton Woods period. In contrast, in seeking to establish that the persistence of international monetary and financial dominance is not always what it is cracked up to be, we are inevitably limited by the fact that there has been only one consequential change in that dominance in the modern period, from sterling to the dollar, and that the circumstances surrounding that shift were special in important respects. But consequential historical events are always special. Whether our arguments are convincing and general is for the reader to judge.