7

Reserve Currency Competition in the Second Half of the Twentieth Century

Widespread international use of the U.S. dollar in the second half of the twentieth century is regularly cited in support of the view that the currency of the country that is the leading economic and financial power tends to dominate cross-border transactions at any point in time. In this chapter, we examine this era more closely. We focus on the currency composition of foreign reserves from the late 1940s to the turn of the twenty-first century.

The use of national currencies as foreign reserves is only one aspect of international currency status. The advantage of focusing on this aspect is that it is possible to assemble a continuous series on the composition of international reserves for a substantial fraction of the world's central banks spanning this period. Data on currencies used for invoicing international trade, in contrast, are available only for scattered countries and years, while surveys of foreign exchange trading in different currencies, courtesy of the BIS, are available only from 1989. In Chapter 4 we saw how interwar evidence on the currency composition of foreign reserves could be used to shed light on (and more precisely, to challenge) the traditional view

emphasizing network increasing returns, first-mover advantage, and the overwhelming dominance of a particular national currency in international transactions at any given time. In this chapter, we extend that analysis to the post–World War II period.

This era is important not only because it is strongly associated with dollar dominance but also because it is marked by sharp changes in financial technology, regulation, and policy. A dramatic decline in the cost of financial transactions made it easier for central banks, like other investors, to shift between currencies and reap the advantages of diversified reserve portfolios. Some governments took steps to actively encourage the use of their currencies as foreign reserves, while others sought to discourage the practice. Still other countries like Japan moved from one stance to the other. With the collapse of the Bretton Woods System in the 1970s, a growing list of countries moved from pegged to flexible exchange rates, something that was widely expected to affect their reliance on dollar reserves.

The picture in this chapter adds nuance to the traditional view of dollar dominance. We find that network effects appear to have weakened in recent decades, consistent with the idea that advances in financial technology have reduced the costs of currency transactions and encouraged portfolio diversification. But there remains evidence of persistence in currency choice, as if tradition and custom continue to matter in international financial markets. The stability and credibility of the policies of the reserve-issuing countries, as captured by such variables as the volatility of their exchange rates, have become increasingly important. Finally, we find that negative policy interventions designed to discourage international use of a currency have been more effective than positive interventions intended to encourage it.

Data

Our data on the currency composition of foreign exchange reserves are drawn from a volume published by the International Monetary Fund (IMF) to take stock of its first 20 years (Horsefield 1969), from which we extracted data for the 1940s and the 1950s; from the Fund's

annual reports, which we used to gather data for the 1960s through 1990s; and from the Composition of Official Foreign Exchange Reserves (COFER) data base, which provides data for 1999–2013. These data are for "allocated" foreign exchange reserves; in other words, there is also a residual nondisclosed and unallocated component attributable to central banks that do not report the currency composition of their reserves.

The currency composition of disclosed reserves may not match that of nondisclosed reserves. But the importance of nondisclosed reserves is a recent phenomenon. It largely reflects the increase in China's reserve holdings after the turn of the century. Nondisclosed reserves accounted for about 47 percent of total foreign exchange reserves in 2014, compared to only about 20 percent in the late 1990s. Our results remain the same when we focus on a subset of advanced economies for which country-level data are available, as we describe below.

These sources report reserves held in U.S. dollars (including eurodollars) and British pounds from 1947, in French francs and Deutschemarks from 1970, and in Dutch guilders, Swiss francs, and Japanese yen from 1973. Reserves held in European Currency Units (ECU) are reported from 1987.[1] Australian and Canadian dollar reserves are reported starting in 2012.[2] In all, 11 currencies were reported as reserve currency units at one time or another.

Valuation effects due to exchange rate changes can produce changes in foreign reserves held in different currencies without any action by central banks. While the early literature ignored this complication, recent studies have computed currency shares at constant exchange rates and shown that such valuation effects can be important.[3] We report results both with and without valuation adjustments.

Figure 7.1 shows the currency composition of foreign reserves since 1947. The dominance of the British pound is evident in the aftermath of World War II, when it accounted for more than 80 percent of foreign exchange reserves. This is a striking exception to the picture of dollar dominance, although, as we show in Chapter 8, it was due to the unusual circumstances of the immediate postwar years. This is then followed by a sharp reversal, with the dollar quickly overtaking sterling and accounting for more than 50 percent

of identified foreign exchange reserves by the early 1950s. The dollar's rise then continues through the mid-1970s.[4] Sterling's share similarly continues to fall, reaching the low single digits at around the same time.

Some fluctuations around these trends reflect exchange rate changes. For example, the dollar's declining share of global reserves after 1976 reflects its depreciation in the course of the subsequent decade, interrupted by its recovery in the first half of the 1980s. Sterling's accelerating fall in the late 1960s and early 1970s similarly reflects the impact of devaluation of the pound around the time of

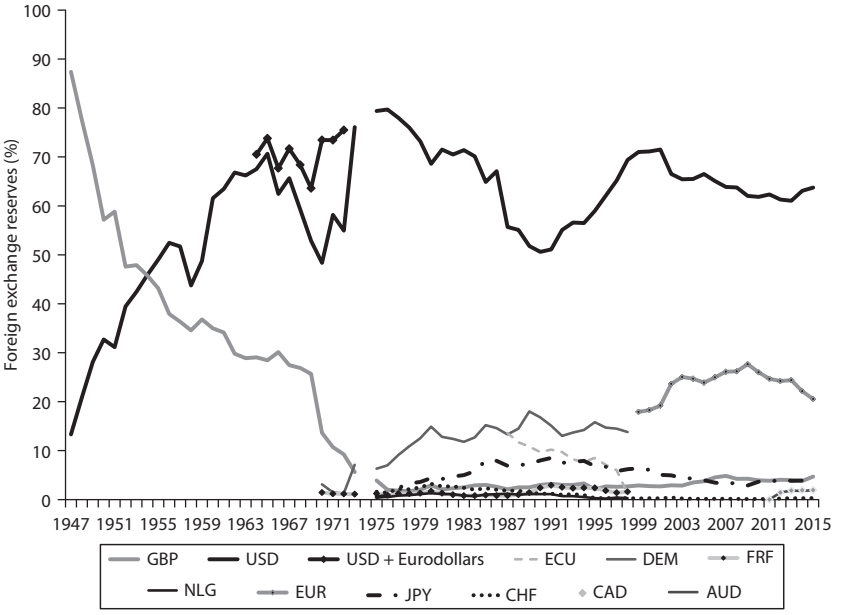

FIGURE 7.1. Currency Composition of Globally Disclosed Foreign Exchange Reserves, 1947–2015 (percent).

Source: Authors' calculations based on IMF data and sources.

Note: The currency shares are derived from U.S. dollar-denominated amounts for 1947–1969 and 1999–2015 as well as from Special Drawing Rights (SDR)-denominated amounts for 1970–1972. The currency shares for the period 1973–1999 are directly provided by the IMF in its annual reports (based on SDR valuation). Starting in 1979 the Fund added the SDR value of ECUs issued against the U.S. dollar to the SDR value of US dollar reserves; after 1987 the ECU was treated as a separate unit. The currency shares reported here exclude unallocated foreign exchange reserves post-1994 (i.e., about 40 percent of total foreign exchange reserves at the end of the sample). AUD, Australian dollar; CAD, Canadian dollar; CHF, Swiss franc; DEM, Deutschemark; ECU, European Currency Unit; EUR, euro; FRF, French franc; GBP, British pound; JPY, Japanese yen; NLG, Dutch guilder; USD, U.S. dollar.

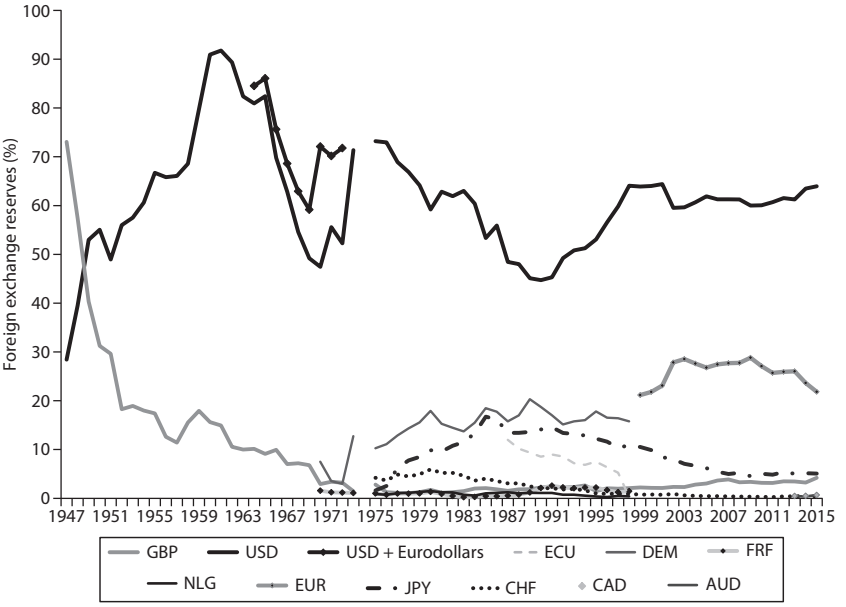

FIGURE 7.2. Currency Composition of Globally Disclosed Foreign Exchange Reserves at Constant Exchange Rates, 1947–2015 (percent).
Source: Authors' calculations based on IMF data and sources.
Note: See Figure 7.1. The currency shares at constant exchange rates calculated using the BIS methodology (and 2012 as base year), as described in Wong (2007). The currency shares reported here exclude unallocated foreign exchange reserves post-1994 (i.e., about 40 percent of total foreign exchange reserves at the end of the sample), as in Figure 7.1. AUD, Australian dollar; CAD, Canadian dollar; CHF, Swiss franc; DEM, Deutschemark; ECU, European Currency Unit; EUR, euro; FRF, French franc; GBP, British pound; JPY, Japanese yen; NLG, Dutch guilder; USD, U.S. dollar.

the collapse of the Bretton Woods System, just as its further drop in 1976 reflects the balance-of-payments and currency crisis that year.[5] This is a reminder that it is important to analyze currency holdings at constant as well as current exchange rates (as in Figures 7.1 and 7.2).

Starting in the 1970s we then observe the rise of the Deutschemark and its successor, the euro. The lines representing these currencies trend upward until the outbreak of the euro crisis in 2010.[6] We also see the rise and fall of the Japanese yen, whose share in global reserves peaks in the late 1980s and early 1990s, coincident with the end of the "bubble economy," the onset of the Japanese economic and financial crisis, and the rise of new subsidiary reserve currencies.[7]

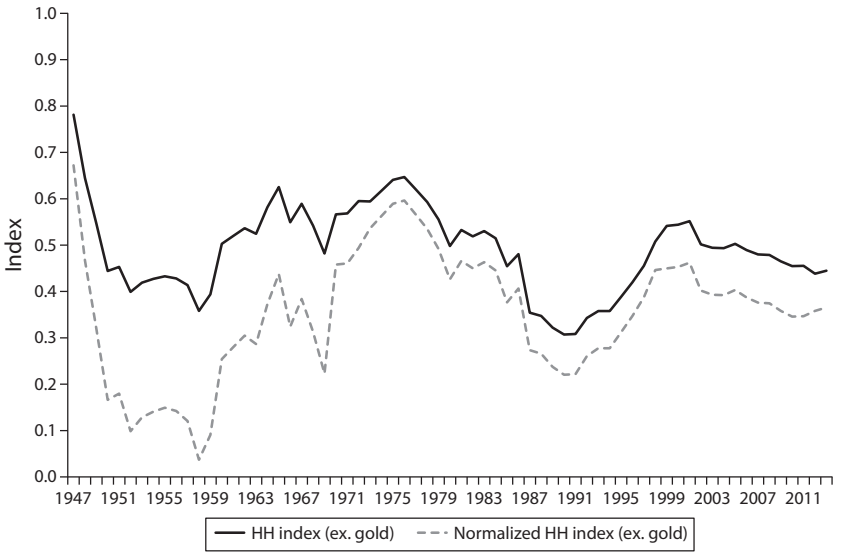

FIGURE 7.3. Currency Concentration of Globally Disclosed Foreign Exchange Reserves, 1947–2013. Source: Authors' calculations based on IMF data and sources.
Note: The basic and standardized Hirschman-Herfindhal (HH) indices calculated for the currency breakdown of global foreign exchange reserves since 1947 (i.e., the sum of squared reserve currency shares, and also scaled by a function of the number of currency units in each year, in the case of the standardized index). An index value of 1 indicates a monopolistic market; an index value of 0 indicates a perfectly competitive market.

Figure 7.3 plots the Hirschman-Herfindhal (HH) index for the concentration of foreign exchange reserves from 1947 through 2012. Two versions of the index are displayed: the simple HH index and the index adjusted for the number of currencies in the global reserve portfolio.[8] Both confirm the high concentration of reserves in one currency (sterling) immediately after World War II, the subsequent rapid fall in concentration as sterling is liquidated and dollars are earned, the growing concentration of reserves in dollars in the 1960s and 1970s, and finally very gradual movement in the direction of less dollar-dominated reserve portfolios.

Specification

Our basic specification relates foreign currency holdings to issuing-country size, exchange rate appreciation, and lagged currency holdings. The lagged currency holdings capture persistence or inertia

effects; following Triffin (1960), we interpret these in terms of custom and tradition.[9] Relative size can be motivated by theoretical models of random matching games that see the emergence of international currencies as the solution to a "double-coincidence-of-wants" problem where an agent's incentive to accept a nation's currency depends on how often he or she trades with a national from that country (Matsuyama, Kiyotaki, and Matsui 1993). We measure relative size as the share of the reserve-currency-issuing country in global GDP, taking data from Maddison (2010).

This is a good place to highlight the distinction between network effects and persistence and to emphasize that one does not imply the other. Persistence can have other sources besides network effects that give rise to first-mover advantage. Examples include habit formation and the absence of low-cost alternatives to the dominant unit for providing reserves on the scale demanded. Conversely, network effects may increase the attractions of a particular standard (in this case, a currency standard) at some point in time without preventing market participants from shifting to another standard at a later point in time, assuming that mechanisms promoting lock-in are weak and agents can coordinate (as argued by David 1986).[10] The success with which open standards for personal electronics have been developed in recent years, weakening lock-in and facilitating shifts between operating systems, illustrates the point (see West 2007).

The credibility term is motivated by the idea that exchange rate depreciation makes holding a currency unattractive and discourages its international use, as in Devereux and Shi (2013). Currency fluctuations affect credibility, because reserve holders prefer reliable stores of value and may be reluctant to hold reserves in units that tend to depreciate too much for too long. We proxy credibility by the average rate of currency appreciation vis-à-vis Special Drawing Rights over the preceding 5 years (in the spirit of Chinn and Frankel 2007).[11]

By focusing on the lagged dependent variable, country size, and trend exchange rate appreciation, we follow the existing literature (see, e.g., Chinn and Frankel 2007, 2008 and Li and Liu 2008). Similarly, when we interpret these variables in terms of persistence, network externalities, and policy credibility, we build on analytical

models emphasizing these effects. Whether country size is an adequate measure of these network effects can be disputed, of course. Below we consider alternatives such as the volume of the issuing country's exports and financial market liquidity (as in, e.g., Portes and Rey 1998 and Papaioannou and Portes 2008).[12]

Similarly, persistence effects reflecting habit formation have been considered in the earlier literature (see, e.g., de Vries 1988). Again, whether our lagged dependent variable is in fact capturing habit formation, as opposed to serially correlated omitted variables, can certainly be questioned. In early econometric work on partial adjustment models, Griliches (1961) suggested instrumenting the lagged dependent variable as a way of addressing this problem. We implement a version of his approach later in the chapter.

Analogously, it can be questioned whether contemporaneous exchange rate changes are a good measure of policy credibility. To address these concerns, we also consider annual CPI inflation rates, exchange rate volatility, the level of public debt, bond yields, and the current account of the balance of payments as additional measures of policy credibility.[13]

Finally, we assemble information on policy measures taken by potential reserve currency issuers (the United States, the United Kingdom, Germany, and Japan) to encourage or discourage use of their currencies as international reserves. These include whether the capital account was open or closed, whether the stated position of the authorities in the issuing country was supportive or opposed, and whether exchange rate arrangements and agreements were conducive in a sense we define below.[14]

We include time effects throughout. These capture changes in the structure of the international monetary and financial system as well as other changes in the world economy.[15] In addition, we estimate the resulting equations with random country effects to account for unobserved country-specific variation.[16]

This is an unbalanced sample by currency and year, raising the question of how to treat the missing observations. One option is to proceed with the unbalanced panel, because these are the data provided by official sources. Another is to fill in zero for the missing

observations, since the IMF presumably saw no need to report reserves held in French francs and Deutschemarks before 1970; or guilder, Swiss francs, and yen before 1973; or Australian dollars before 2012 because such holdings were so small (effectively zero by the standards of reserves held in the form of U.S. dollars).[17] We report results using both procedures.

To test for shifts around the time of the collapse of Bretton Woods, we interact these variables with a post-1973 dummy variable. We test for changes in the overall relationship and in the sign and magnitude of the individual coefficients. In robustness checks, we also run rolling Chow tests to investigate whether years other than 1973 qualify as breaks. All the variables are standardized.

Results

Table 7.1 shows the results when the dependent variable is the share of identified foreign exchange reserves held in a particular currency with valuation effects removed. Columns 1 and 2 report results with the three basic explanatory variables. Columns 3 and 4 are for the pre-1973 period, and columns 5 and 6 show results for 1973 on. Column 7 includes interaction terms with a post-1973 dummy variable to test for post-1973 structural shifts. In other estimates, we substitute zeroes for missing observations of the dependent variable in Table 7.1.[18]

The results are consistent with the findings of previous studies for the recent period. Persistence is strong; a coefficient of 0.9 on the lagged dependent variable indicates a half-life of roughly 7 years. This value suggests that to adequately understand the evolution of currency shares, it is important to consider medium-term evolutions, as we do here. But this point estimate also indicates that the share of a currency in global reserves can be halved in less than a decade, which is what sterling experienced from the mid-1960s to the early 1970s. The coefficient on size is also important, consistent with the emphasis of previous authors on network effects. The full sample estimates in column 2 of Table 7.1 suggest that a one-standard-deviation increase in issuing-country size increases the share of its currency in global foreign exchange reserves by

TABLE 7.1. Demand for Reserves: Basic Estimates

	(1) Full sample	(2) Full sample	(3) Pre-1973	(4) Pre-1973	(5) Post-1973	(6) Post-1973	(7) Full sample
Inertia	0.992***	0.927***	0.997***	0.758***	0.989***	0.954***	0.886***
	(0.002)	(0.021)	(0.003)	(0.037)	(0.004)	(0.009)	(0.024)
Network effects		1.538***		5.808***		0.819***	3.036***
		(0.471)		(0.807)		(0.173)	(0.570)
Credibility		0.172**		−2.007***		0.145*	−1.279***
		(0.072)		(0.109)		(0.079)	(0.307)
Post-73 dummy							2.921***
							(0.943)
Inertia × post-73 dummy							0.045**
							(0.023)
Network effects × post-73 dummy							−1.722***
							(0.534)
Credibility × post-73 dummy							1.436***
							(0.388)
Currency effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	288	271	54	42	234	229	271
No. of groups	8	8	4	4	8	8	8
R^2 (overall)	0.987	0.993	0.964	0.988	0.995	0.995	0.993
R^2 (within)	0.899	0.881	0.900	0.767	0.831	0.836	0.887
R^2 (between)	1.000	1.000	0.998	1.000	1.000	1.000	1.000

Notes: Random effects estimates of baseline equation where reserve currency shares purged of valuation effects are regressed on their standard determinants over selected sample periods, namely: the full sample (in columns 1 and 2); 1947–1972 (in columns 3 and 4), 1973–2013 (in columns 5 and 6) and the full sample allowing for a structural break in the estimated coefficients (in column 7). Standard errors in parentheses are robust to heteroskedasticity and clustered heterogeneity; ***, $p < 0.01$; **, $p < 0.05$; *, $p < 0.1$.

1.5 percentage points in the same year and by 21 percentage points in the long run. A one-standard-deviation appreciation in a currency's exchange rate relative to trend increases its share of global foreign exchange reserves by about 0.2 percentage points in the short run and 2 percentage points in the long run.

The effects of policy credibility as measured by the rate of appreciation of the exchange rate are more complex. Previous studies reported mixed results for this variable, and our results are mixed as well. In Table 7.1, policy credibility shows up as positive after 1973, as expected, but negative prior to that. When we add the zero observations, however, the policy credibility measure for the pre-1973 period turns positive, though it is insignificantly different from zero.[19] A cautious interpretation is that policy credibility had weaker effects before 1973 than after.[20]

We can compare our results for the full period with those of Chinn and Frankel (2007, Table 8.4, p. 303), where theirs are estimated on a shorter period. Our estimates of the size effect (designed to capture network effects) are about twice as large as theirs (although they are the same when we restrict the period to post-1973, as they do). Estimates of the lagged dependent variable, designed to capture persistence effects, are again the same. And our estimate for the change in the exchange rate is essentially identical to theirs, except that in our case, this variable is statistically significant.[21]

But there are noticeable differences between sub-periods. The coefficient capturing network effects in Table 7.1 is smaller in the second period than in the first.[22] At the same time, there is evidence of an increase in persistence. The coefficient on this variable is larger after 1973 than before, and the difference is statistically significant.[23] That inertia is stronger after Bretton Woods reflects the fact that the post-1973 period has not seen a rapid shift from one currency to another comparable to the shift from sterling to the dollar between 1947 and 1973. Before 1973, serious doubts about the prospects for sterling as a reserve currency caused reserve managers to question their habits and move away from the currency; because the United States has for the most part avoided creating equally serious doubts about the dollar, the persistence effects have, well, persisted.

That network effects are less strong is similarly intuitive. Progress in facilitating interoperability among currency units and declining switching costs argue for replacing the traditional (or "old") view of international currencies—according to which sufficiently strong network increasing returns lead to a natural monopoly in international currency status—with the new view with very different empirical implications. As explained in Chapter 1, the new view builds on the literature on information technology and systems engineering of open systems. It builds on work in which switching costs can be overcome by effective coordination mechanisms and large shocks (see, e.g., David and Bunn 1988, Clark 2003, and Farrell and Klemperer 2007).[24] Examples of forces that have reduced switching costs include advances in financial and transactions technologies, the development of currency swap markets, new hedging instruments, and increased availability of information about foreign exchange markets. These developments have allowed central banks and others to engage in international transactions and hold reserves against associated contingencies in currencies other than the dominant unit or units, without incurring costs as large as before.

The alternative to using historical information and priors as a basis for hypotheses about structural shifts in the relationship between reserves and their determinants is to let the data speak. Rolling Chow tests for the coefficients on persistence, issuing-country size as a proxy for network effects, and policy credibility produce the largest test statistic in 1960 (Figure 7.4). This was the year when U.S. official foreign monetary liabilities first exceeded U.S. gold reserves, and Triffin (1960) warned that a run by official foreign creditors was possible. There is then evidence of another structural break in 1966, 1 year prior to the second post–World War II devaluation of sterling, a currency already of great concern to investors; the devaluation itself was followed by another discrete decline in sterling reserves. The year 1966 was also immediately before France's withdrawal from the Gold Pool, under which European countries holding dollar reserves agreed to reimburse the United States for a portion of the gold it lost when other countries converted their dollars.[25] It was also a period of heightened concern over the future of the Bretton Woods System and hence the dollar peg.[26]

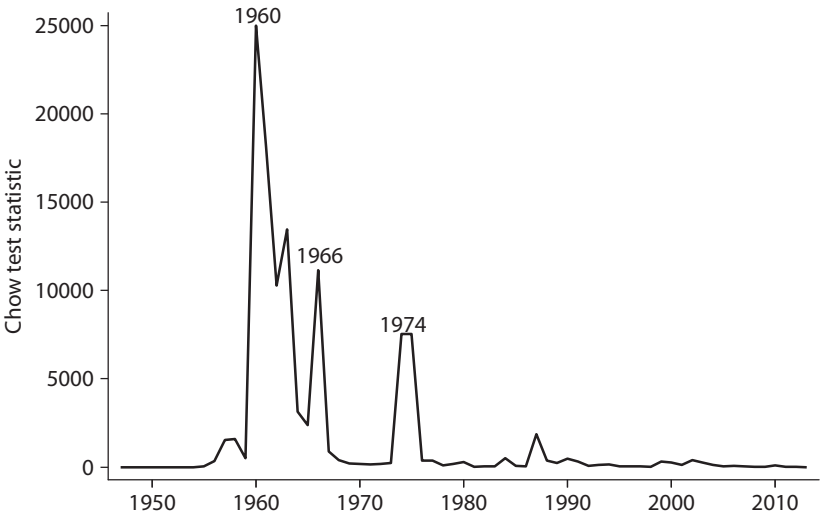

FIGURE 7.4. Time-Varying Structural Break Tests.
Source: Authors' calculations.
Note: The time-varying Chow test statistic (i.e., of the restriction test that the three coefficients on persistence, size, and credibility interacted with a step dummy are insignificant) obtained when the step dummy is allowed to vary across all years of our sample. The critical value of a $\chi 2$ (3) distribution at the 1 percent level of confidence is 11.34.

Dividing the sample in 1966 as opposed to the early 1970s has minimal impact on the point estimates and confidence intervals.[27] Nonetheless, the fact that the sharpest shift in the relationship between the currency denomination of foreign reserves on the one hand, and persistence, issuing-country size, and policy credibility on the other occurs in the 1960s rather than in 1971–1974 highlights how contemporaries may have overestimated the extent to which the actual collapse of Bretton Woods would tarnish the attractions of the dollar. It suggests that they may have overestimated the extent to which the demand for and composition of reserves would be altered by the actual shift from fixed to flexible exchange rates, as opposed to anticipations thereof.[28]

But regardless of whether one places the shift in 1960, 1966 or the early 1970s, our results are consistent with the fact that the determinants of the demand for and composition of international reserves fundamentally changed with the breakdown of Bretton Woods.

Our data, while disaggregated by currency, are aggregated across countries, where decisions regarding the currency composition of

foreign reserves are made at the country level. We therefore estimated the same relationships on country-level data for a subset of advanced economies for which foreign reserve data disaggregated by currency are available.[29] These data provide annual foreign exchange reserves divided into dollar and non-dollar holdings. We used the share of the dollar in total foreign exchange reserves as the dependent variable and estimated the same basic specification using panel-data methods.

The results, shown in Table 7.2, are again broadly similar to those described above. Again there is evidence of significantly stronger inertia effects and weaker network effects after the collapse of Bretton Woods. The results also show evidence of stronger credibility effects, although this change was not statistically significant.[30]

Policy Variables

One potential explanation for the continued dominance of the dollar is the reluctance of other countries to permit international use of their currencies. In the 1960s and 1970s, Germany used capital controls to limit access to the Deutschemark. It sought to discourage central banks from holding Deutschemark reserves on the grounds that their doing so might undermine the Bundesbank's ability to control inflation. From the 1950s through the early 1980s, Japan similarly used controls and regulatory restrictions to limit official foreign holdings of yen on the grounds that such holdings would complicate its pursuit of industrial policies.

We consider measures to support and discourage international use of their currencies by these two countries and, in addition, by the United States and the United Kingdom.[31] The United Kingdom, as noted, took steps in the 1940s and 1950s to limit the liquidation of sterling reserves; subsequent policy initiatives, such as the City of London's financial "Big Bang" liberalization in 1986, can be seen as supporting sterling's international role. The United States adopted policies to support the dollar's international role, such as the Interest Equalization Tax in 1963 and the Voluntary Credit Restraint Program in 1965, to limit capital outflows, stem gold losses, and foster confidence in the convertibility of the dollar.

TABLE 7.2. Demand for Reserves: Country-Level Estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Full sample	Full sample	Pre-1973	Pre-1973	Post-1973	Post-1973	Full sample
Inertia	0.898***	0.897***	0.471***	0.471***	0.935***	0.935***	0.484***
	(0.029)	(0.029)	(0.115)	(0.115)	(0.022)	(0.023)	(0.107)
Network effects		6.743		1.789***		6.784	27.536+
		(12.880)		(0.439)		(13.190)	(17.285)
Credibility		1.326		−4.777***		1.339	−1.309
		(1.676)		(1.821)		(1.734)	(3.329)
Inertia × post-73 dummy							0.450***
							(0.111)
Network effects × post-73 dummy							−20.752+
							(13.609)
Credibility × post-73 dummy							2.648
							(4.794)
Currency effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	540	530	120	120	420	410	530
No. of groups	10	10	10	10	10	10	10
R^2 (overall)	0.867	0.865	0.363	0.363	0.893	0.891	0.876
R^2 (within)	0.834	0.832	0.168	0.168	0.846	0.844	0.844
R^2 (between)	0.997	0.997	0.967	0.967	0.999	0.999	0.999

Notes: Random effects estimates of baseline model where the share of the U.S. dollar in the reserve holdings of a subset of advanced economies is regressed on the standard determinants of foreign reserve currency choice over selected sample periods, namely: full sample (in columns 1–2); 1960–1972 (in columns 3–4), 1973–2014 (in column 5–6), and full sample allowing for a structural break in the estimated coefficients (in column 7). Standard errors in parentheses are robust to heteroskedasticity and clustered heterogeneity; ***, $p < 0.01$; **, $p < 0.05$; *, $p < 0.1$; $^{+}$, $p < 0.16$.

The individual measures making up the dummy variables are described in Table 7.A in Appendix 7A.

The estimates, shown in Table 7.3, confirm that policies matter, but not all in the same way. It is evidently easier to discourage than to promote reserve currency use. Policies that aim to support currency use are often unsuccessful, with a few notable exceptions. Some evidence suggests, for example, that financial openness helped strengthen the importance of a particular currency as a reserve currency. The estimates in column 4 of Table 7.3, for example, suggest that a one-standard-deviation increase in a country's financial openness (i.e., about 21 index points) is associated with an increase in the share of its currency in global reserves of roughly half a percentage point in the short run and 6 percentage points in the long run. But other supportive policies appear less important. Their effect is typically insignificant.

In contrast, policies discouraging currency use often have had significant effects. This is the case of unsupportive official positions, unsupportive exchange rate regime measures (i.e., devaluing one's currency, in the manner of the repeated devaluations of sterling between 1947 and 1976 and of the U.S. dollar in the early 1970s), and other unsupportive measures that may have dented confidence (e.g., the collapse of the Gold Pool and discussions of an IMF

TABLE 7.3. Demand for Reserves: Estimates with Policy Measures

	(1)	(2)	(3)	(4)	(5)	(6)
	Full sample	Pre-1973	Post-1973	Full Sample	Pre-1973	Post-1973
Inertia	0.917***	0.789***	0.940***	0.916***	0.801***	0.952***
	(0.010)	(0.078)	(0.018)	(0.015)	(0.087)	(0.016)
Network effects	1.855***	6.513***	1.305***	1.969***	5.392***	1.097***
	(0.273)	(1.130)	(0.331)	(0.347)	(1.572)	(0.323)
Credibility	0.021	−0.746	0.046	0.127***	−1.238	0.104*
	(0.059)	(1.760)	(0.045)	(0.043)	(1.244)	(0.056)
IMF Article VIII compliance	0.036***	−0.068	0.030*			
	(0.007)	(0.065)	(0.016)			

Continued on the next page

TABLE 7.3. (*continued*)

	(1) Full sample	(2) Pre-1973	(3) Post-1973	(4) Full Sample	(5) Pre-1973	(6) Post-1973
Capital flow restrictions				0.023***	−0.012	0.008
				(0.004)	(0.039)	(0.007)
Official position *(supportive)*	−0.368	0.000	−0.592	−0.294	0.000	−0.559
	(1.222)	(0.000)	(1.160)	(1.217)	(0.000)	(1.159)
Official position *(restrictive)*	−3.044***	−3.424	−2.112***	−3.298***	−4.637	−2.164***
	(0.885)	(3.693)	(0.592)	(0.860)	(4.414)	(0.561)
Exchange rate regime *(supportive)*	−0.073	0.000	0.487	−0.060	0.000	0.564
	(0.827)	(0.000)	(0.818)	(0.871)	(0.000)	(0.844)
Exchange rate regime *(restrictive)*	−2.053**	−2.597	−2.588***	−2.058**	−2.194	−2.644***
	(0.936)	(4.922)	(0.536)	(0.924)	(4.795)	(0.510)
Other measures *(supportive)*	−0.098	−1.794**	0.839+	−0.180	−1.874*	0.694
	(0.384)	(0.844)	(0.600)	(0.368)	(1.025)	(0.630)
Other measures *(restrictive)*	−5.755***	−10.644**	−3.969***	−5.769***	−10.006**	−3.880***
	(0.824)	(4.337)	(0.425)	(0.847)	(4.121)	(0.422)
Currency effects	Yes	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	271	42	229	271	42	229
No. of groups	8	4	8	8	4	8
R^2 (overall)	0.994	0.991	0.996	0.994	0.991	0.996
R^2 (within)	0.904	0.828	0.864	0.902	0.828	0.863
R^2 (between)	1.000	1.000	1.000	1.000	0.999	1.000

Notes: Random effects estimates of baseline model where reserve currency shares purged of valuation effects are regressed on their standard determinants over selected sample periods, namely: the full sample (in columns 1 and 4); 1947–1972 (in columns 2 and 5), 1973–2013 (in columns 3 and 6) controlling for policy measures that aim to support or restrict international currency use of the U.S. dollar, pound sterling, Deutschemark, and Japanese yen. Standard errors in parentheses are robust to heteroskedasticity and clustered heterogeneity; ***, $p < 0.01$; **, $p < 0.05$; *, $p < 0.1$; $^{+}$, $p < 0.16$.

substitution account for the dollar).[32] The estimates in column 4 suggest that devaluations are typically associated with a decline in the share of a country's currency in global reserves of roughly 2 percentage points in the short run and 24 percentage points in the long run.[33]

Conclusion

In this chapter we analyzed the composition of international reserves from the late 1940s to the turn of the twenty-first century. In so doing, we utilized newly assembled data spanning the second half of the twentieth century on the currency composition of reserves, its determinants, and policy measures encouraging or discouraging the internationalization of currencies.

We find evidence of shifts in the determinants of currency shares around the time of the breakdown of Bretton Woods. In particular, the effects of inertia and the credibility of policies became stronger after the demise of Bretton Woods, while those associated with network effects weakened.

That the effects of inertia have strengthened may be seen as favoring the leading currency (the dollar), a fact underscored by the resilience of its share in global reserves since the financial crisis of 2008–2009 (a period encompassed by our data). In contrast, the weakening of network effects works against the dollar's first-mover advantage. To be sure, persistence can have other sources besides network effects, such as habit formation and the absence of alternatives. That said, the observation that persistence is not guaranteed by network effects suggests that its existence—and the dollar's continued dominance—should not be taken for granted.

The policy toolkit to discourage international currency use contains a range of effective instruments, from official announcements to exchange-rate-regime-related measures. In contrast, policy tools to encourage reserve currency status and overcome inertia have been more limited; this toolkit has been dominated by two instruments: macroeconomic stabilization policy and capital account liberalization. Our results suggest that the first set of tools has been more effective than the second: it is typically easier to discourage use of a national currency in international transactions than it is to promote its use.

These last findings have implications for China's earlier policies of discouraging international use of the renminbi and now for its efforts to promote it. They are consistent with the effectiveness of China's capital controls in limiting international use of the currency and with the evidence of Huang, Daili, and Gang (2014) that the renminbi still punches below its weight as a reserve unit. There is ample precedent for the effectiveness of such restrictive measures. At the same time, our findings suggest that, while capital account liberalization may be necessary for renminbi internationalization, it will not suffice, and that the success of the other policy initiatives needed to achieve this goal cannot be taken for granted. We revisit these issues in Chapter 11, which focuses on the renminbi.