

Board of Governors of the Federal Reserve System

International Finance Discussion Papers

ISSN 1073-2500 (Print)

ISSN 2767-4509 (Online)

Number 1404

February 2025

## **Estimating the Volume of Counterfeit U.S. Currency in Circulation**

Ruth Judson

Please cite this paper as:

Judson, Ruth (2025). "Estimating the Volume of Counterfeit U.S. Currency in Circulation," International Finance Discussion Papers 1404. Washington: Board of Governors of the Federal Reserve System, <https://doi.org/10.17016/IFDP.2025.1404>.

NOTE: International Finance Discussion Papers (IFDPs) are preliminary materials circulated to stimulate discussion and critical comment. The analysis and conclusions set forth are those of the authors and do not indicate concurrence by other members of the research staff or the Board of Governors. References in publications to the International Finance Discussion Papers Series (other than acknowledgement) should be cleared with the author(s) to protect the tentative character of these papers. Recent IFDPs are available on the Web at [www.federalreserve.gov/pubs/ifdp/](http://www.federalreserve.gov/pubs/ifdp/). This paper can be downloaded without charge from the Social Science Research Network electronic library at [www.ssrn.com](http://www.ssrn.com).

# Estimating the Volume of Counterfeit U.S. Currency in Circulation

Ruth Judson  
rjudson@frb.gov  
Division of International Finance  
Board of Governors of the Federal Reserve System

## Abstract

The incidence of currency counterfeiting and the possible total stock of counterfeits in circulation are popular topics of speculation and discussion in the press and are of substantial practical interest to the Federal Reserve, the U.S. Treasury and the United States Secret Service (USSS), who are jointly responsible for U.S. banknote design, including security features, and production. This paper assembles data from Federal Reserve and USSS sources and presents a range of estimates for the number of counterfeits in circulation in the United States. In addition, the paper presents figures on counterfeit passing activity by denomination, location, and counterfeit type.

The paper has two main conclusions: first, the stock of counterfeits in the United States as a whole is at most about \$30 million, or about 1 in 40,000 notes and is likely about \$15 million, or on the order of 1 every 80,000 genuine notes in both piece and value terms. This estimate marks a significant decline from the estimate of 1 in 10,000 notes presented in Treasury (2006) using similar methods and data sources, and the decline is likely at least partially due to increased circulation of higher-security banknotes as well as increased public education about U.S. dollar banknote security features. Second, when counterfeit notes of reasonable quality are considered, losses to the U.S. public from only the high-quality counterfeits of the most commonly used notes, the \$20 and smaller denominations, are minuscule. However, there is a range of estimates overall for counterfeits in circulation, and these estimates vary by denomination.

JEL code: C89

Keywords: Banknotes, counterfeiting, estimation, money

# 1 Introduction<sup>1</sup>

U.S. banknotes are widely used both within and outside the United States, and maintaining the quality and security of notes for all users is a significant consideration in design decisions, which are made by the U.S. Treasury in consultation with the Federal Reserve and the U.S. Secret Service (USSS).<sup>2</sup> As a result, understanding the likely incidence of counterfeits in circulation over time is important for the selection of design features and public education. In this paper, I attempt to place an upper bound on the quantity of counterfeit in circulation in the United States based on samples of counterfeit data collected by the USSS and Federal Reserve together with our understanding of circulation patterns for genuine and counterfeit currency.<sup>3</sup>

To make these calculations, I take advantage of very good sampling data from two sources that can be considered independent in various dimensions. In order to develop appropriate confidence bounds for extrapolation, the data from these two sources are compared. Both sources suggest that the incidence of counterfeits in the population is quite small, in the neighborhood of one note in 40,000 for the denominations now being issued during fiscal year 2023. This figure represents a significant decline from the last estimate of 1 in 10,000 based on data from 2005 and presented in U.S. Treasury (2006). Although it is impossible to know with certainty how various factors contributed to this decline, this period included the introduction of new, more secure banknotes.

In addition to these calculations, it is important to note that it is unlikely that small areas containing large

---

<sup>1</sup> This work would not have been possible without generous help from Jon Ferris, Sue Fortunato, Amanda Moffett, Nadiyah Aquil, and John Lapati, USSS Criminal Investigative Division; Elliot Shuke and Joann Freddo, Cash Function of the Federal Reserve Bank of New York; Brian Lawler, Peter Niebyl, Richelle Stento, and Kristen Wilson, Division of Reserve Bank Operations and Payment Systems; and Daniel Beltran, Division of International Finance. I am grateful for their comments, insights, and assistance with data. The views presented are solely those of the author and do not necessarily represent those of the Federal Reserve Board or its staff.

<sup>2</sup> A series of earlier papers and reports indicate that the majority of genuine U.S. currency is likely in circulation outside the United States. Judson and Porter (2001), Porter (1993), Porter and Judson (1996), U.S. Treasury (2000, 2003, 2006), Porter and Weinbach (1999), Judson and Porter (2004), Judson (2012, 2017, 2018, 2024). Portions of the material here, which were written by the authors, appear in U.S. Treasury (2000, 2003, 2006).

<sup>3</sup> The Treasury, U.S. Secret Service, and Federal Reserve work together on currency design. Currency is produced by the Bureau of Engraving and Printing, a branch of the Treasury. The Federal Reserve distributes currency. The USSS charged with securing the financial infrastructure of the United States and combatting counterfeiting. From 1996 to 2006, the Federal Reserve and Treasury were legally required to provide estimates of genuine and counterfeit currency circulating outside the United States as part of the Anti-Terrorism and Effective Death Penalty Act of 1996, which obligated the Secretary of the Treasury, in consultation with the interagency Advanced Counterfeit Deterrence group, see <http://www.treasury.gov/offices/domestic-finance/acd/about.html>, to make several reports to the Congress on the use and counterfeiting of U.S. currency abroad, including U.S. Treasury (2000, 2003, 2006).

numbers of counterfeits can exist for long outside the banking system, especially within the United States, and the total number of counterfeits circulating is at most a couple of times what the sampling data indicate. In particular, I find that an upper bound on the stock of counterfeit currency in circulation, as a share of genuine, would still be about 1 in 40,000, with the most likely estimate about 1 in 80,000. Finally, I present evidence that, for the denominations most commonly handled by U.S. consumers, the incidence of counterfeits that can pass basic examination by consumers and cash handlers is minute, well below one in 1 in 100,000.

The paper proceeds as follows. The next section provides a brief overview of U.S. dollar banknote demand and counterfeiting over time. Section 3 reviews the data sources used for this analysis. The fourth section presents estimates of the likely total value of counterfeit dollars in circulation within the United States based on Federal Reserve and USSS data. The fifth section concludes.

## 2 Background

Out of the approximately \$2.3 trillion in U.S. dollars held in the form of banknotes (paper currency) in circulation at the end of 2023, USSS data recorded \$102 million in counterfeit currency passed on the public worldwide during fiscal year 2023.<sup>4 5</sup> Although a great deal of U.S. currency is in circulation per U.S. resident, not all U.S. currency is held within the United States.<sup>6</sup> U.S. banknotes are also used widely overseas: the U.S. dollar is the leading international currency in many regions, and estimates from earlier studies suggest that between half and

---

<sup>4</sup> Fiscal year 2023 was from October 1, 2022 to September 30, 2023. All figures in this paper are based on fiscal year data unless otherwise noted. Currency in circulation is measured several different ways, depending on whether currency held in the vaults of depository institutions ("vault cash") and Treasury currency, which includes Treasury notes and coin, are included. The Federal Reserve's data on currency in circulation, reported in the H.4.1 Statistical Release, cover only Federal Reserve notes, including vault cash, and exclude Treasury currency and coin. The [Treasury Bulletin March 2023 issue](#), table USCC-2, indicates that, as of end-2022, coin in circulation was \$50 billion and non-Federal Reserve banknotes in circulation were about \$0.5 billion.

<sup>5</sup> Secret Service data indicate that additional quantities were "seized," or confiscated before they entered circulation. In this paper I focus on the figures for "passed" counterfeits. While seized notes posed some threat prior to the seizure, passed counterfeit notes clearly caused losses to the banknote-using public. Moreover, the fact that they were passed at least once suggests that they passed a "quality control" by fooling at least one person or machine.

<sup>6</sup> The observations in this section are drawn from first-hand observations during visits to dozens of economies by the author since the mid-1990s under the auspices of the International Currency Awareness Program (ICAP) run jointly by the Federal Reserve, U.S. Treasury, U.S. Secret Service, and Bureau of Printing and Engraving; refer to U.S. Treasury (2006), Table 3.1 for a list of countries visited. The authors also participated in a precursor program to the ICAP. During these visits, the authors spoke with hundreds of senior officials from central banks, commercial banks, cash handlers, and law enforcement agencies about currency usage and counterfeiting outside the United States.

two thirds of all U.S. currency in circulation is held outside the United States.<sup>7</sup> Despite the large share of U.S. currency held abroad, nearly all of the \$102.1 million in counterfeit currency passed in fiscal year 2023, \$102.0 million, was recorded as being passed domestically. This imbalance is largely because the USSS has jurisdiction over counterfeit enforcement within the United States, while foreign countries maintain jurisdiction within their own countries.

The figure of \$102 million in passed counterfeit currency in fiscal year 2023 should be considered in the context of losses from other types of fraud. While the loss associated with a single counterfeit to the individual who mistakenly accepts it can be significant, the aggregate loss of \$102 million in fiscal year 2023 amounts to about 30 cents per U.S. resident, a minor amount. Losses from counterfeiting have also been very small relative to the cost of credit card fraud and other forms of fraudulent transactions. For example, in 2021, the cost of credit card fraud losses in the U.S. was estimated to be \$12 billion, or over 100 times the cost of counterfeiting.<sup>8</sup>

## **2.1 U.S. Dollar Demand Over Time**

The Federal Reserve supplies U.S. currency on demand. In practical terms, Federal Reserve Banks provide currency at face value to banks that have accounts with them. Banks that do not have accounts with the Federal Reserve can purchase currency through their correspondent banks that do have Federal Reserve accounts. Individuals and nonfinancial firms typically obtain currency from banks or currency exchanges.

As a share of the monetary aggregates, U.S. currency is relatively small: it makes up just over a third of the narrow monetary aggregate, M1, and about a tenth of the broader monetary aggregate, M2. However, there is a great deal of U.S. currency outstanding: U.S. Currency in circulation at the end of 2023 amounted to about \$2.3 trillion, or nearly \$7,000 for every U.S. resident.<sup>9</sup> Even allowing for a substantial share of foreign holding of U.S. banknotes, domestic banknote holdings are roughly \$3,000 per U.S. resident.

Demand for U.S. currency, especially from overseas, has risen over time even as electronic payments have

---

<sup>7</sup> Judson and Porter (2001, 2010), Porter (1993), Porter and Judson (1996), U.S. Treasury (2000, 2003, 2006), Judson (2012, 2017, 2018, 2024).

<sup>8</sup><https://nilsonreport.com/newsletters/1232/>.

<sup>9</sup> Weekly figures on the quantity of currency held by the public are reported on the Federal Reserve's H.4.1 and H.6 statistical releases. Data on currency in circulation by denomination are reported quarterly by the U.S. Treasury in the Treasury Bulletin.

become cheaper, easier, and more widely used. Still, currency demand consistently rises in times of uncertainty. Most recently, the COVID-19 pandemic sparked enormous demand for currency, of which a substantial share was likely from domestic sources.<sup>10</sup> Although this paper focuses on estimates of the domestic incidence of counterfeiting, it should be noted that the heavy use of U.S. dollars internationally is a significant consideration in decisions about U.S. banknote security features and educational campaigns. In estimating the incidence of counterfeiting within the United States, it is critical to adjust for these foreign holdings, and the calculations in this paper incorporate this factor.

## 2.2 The Economics of Counterfeiting

Both theoretical studies and the limited available empirical information suggest that high-quality counterfeiting is expensive and only effective when few counterfeits are passed relative to the amount of genuine currency in circulation. Producing high-quality counterfeits requires access to presses, inks, and high-quality paper. The notes must then be either passed or distributed to others for passing, which is a complicated undertaking when large volumes of counterfeit notes are produced.<sup>11</sup> An individual might be fooled into accepting a batch of counterfeits once, but would likely be cautious about further transactions with a known source of counterfeits. Similarly, businesses generally consider counterfeits part of the cost of doing business, but would likely be more cautious if a single customer or location were known to be the source of counterfeits in the past. Thus, the counterfeit notes must be ever more widely dispersed. Informal discussions with the U.S. Secret Service indicate that the full cost of producing and *distributing* high-quality counterfeits is high relative to potential counterfeiters' profits.<sup>12</sup>

The few theoretical papers on currency counterfeiting also conclude that the only long-run equilibria are for

---

<sup>10</sup> See Judson (2024) for more discussion of this episode, for more discussion of international demand for U.S. currency, and for more details about the challenges of estimating domestic and foreign holdings of U.S. currency.

<sup>11</sup> In very large quantities, currency is bulky: \$1 million in \$100 notes weighs about 20 pounds (or about 10 kg.) and fills a briefcase. In addition, U.S. Customs requires reporting of the transportation of more than \$10,000 in currency or monetary instruments ([https://www.cbp.gov/sites/default/files/documents/currency\\_reporting.pdf](https://www.cbp.gov/sites/default/files/documents/currency_reporting.pdf)). Whether or not counterfeiters comply with these requirements, the reporting requirement adds potential scrutiny.

<sup>12</sup> The fixed costs of producing high-quality counterfeits are relatively high. In addition, the costs of (successfully) passing more than a few notes into circulation can escalate quickly as victims who have accepted counterfeit currency along with local law enforcement become aware of the new threat and increase their level of scrutiny and local warnings to the public.

two alternate states, either very low or very high levels of counterfeiting. Lengwiler (1997) finds that in fact the only possible equilibria are for zero counterfeiting or a high level of counterfeiting. In his model, the equilibrium that actually occurs is a function of the note's production cost (i.e., difficulty of counterfeiting) and its face value. The monetary authority is more likely to invest in higher-cost notes and thus insure a zero-counterfeiting equilibrium the higher is the cost of counterfeiting and the higher is the value of the note. The U.S. dollar, especially its pre-1996 series, had significantly fewer counterfeit protection devices than many other industrialized countries and was relatively low in face value.<sup>13</sup> However, as Green and Weber (1996) point out, the technology embedded in the new-design 1996-series \$100 approached that of other countries' currency at that time. The technology of the original euro banknote series, which was introduced in 2002, was generally higher than the 1996-series U.S. dollar, but is comparable to the 2004-series U.S. dollar first issued in October 2003.<sup>14 15</sup> Smith and Quercioli (2003) likewise find that a behavioral model predicts low counterfeiting rates, especially when authentication costs are low, as they are with newer banknote designs.

### **3 Data Sources: An Overview**

We have two primary sources of data from the United States Secret Service and the Federal Reserve. Both sources of data suggest that the incidence of counterfeiting among actively circulating U.S. banknotes is quite low.

#### **3.1 U.S. Secret Service Data on Counterfeiting**

The United States Secret Service (USSS) is responsible for investigating and preventing counterfeiting activity. They record counterfeit currency as seized (that is, found at the point of production and/or shipment, before it enters circulation) or passed (that is, found in circulation) and by denomination, location, and production method. I focus on the data for counterfeit notes passed for two reasons: first, only counterfeit passed were ever in circulation; second, only passed counterfeits generate an economic loss to the public.

---

<sup>13</sup>The highest U.S. denomination now issued is \$100. In contrast, many other countries issue denominations valued between \$500 and \$1,000, and a few countries issue notes whose value exceeds \$1,000.

<sup>14</sup> See <https://www.uscurrency.gov/denominations/20> for a summary of U.S. banknote designs and security features over time.

<sup>15</sup> A newer euro design was introduced beginning in 2013. A new design for the U.S. dollar is scheduled to begin circulation in 2026. See <https://www.ecb.europa.eu/euro/banknotes/europa/html/index.en.html> and <https://www.bep.gov/currency/currency-redesign> for more information.

Table 1 summarizes counterfeit passing activity since 2000. As shown in Table 1, in fiscal year 2023 the Secret Service recorded \$102 million in counterfeit currency passed in the United States.

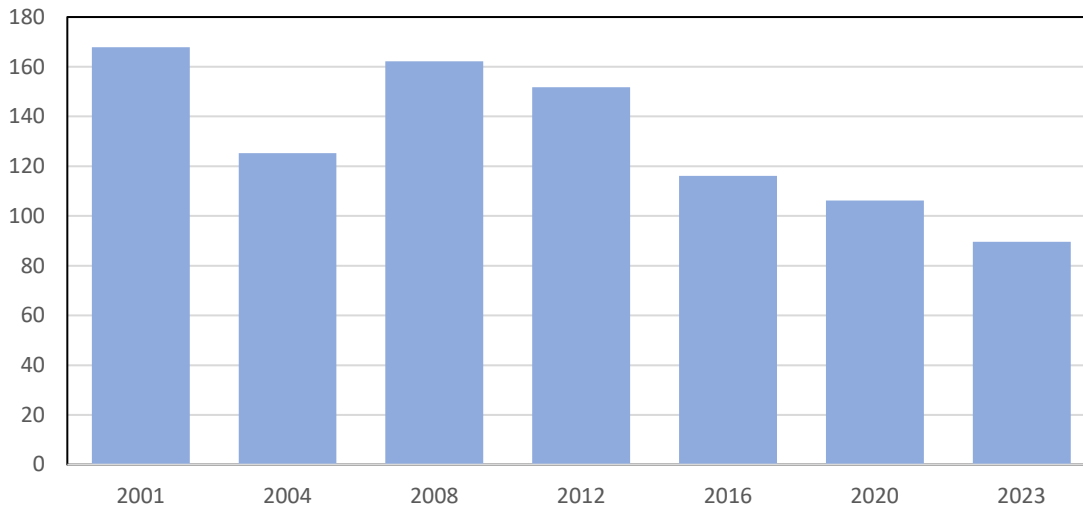
**Table 1**  
**Passed Counterfeit Currency Received by USSS**  
**Domestic Sources Only, Selected Fiscal Years 2000 – 2023**  
**Millions of dollars**

Fiscal Year	Value Passed
2000	39.7
2004	43.4
2008	64.1
2012	80.6
2016	81.6
2020	99.6
2023	102.0

Note. “Passed” indicates currency that was exchanged for goods or services.

Source: USSS.

Chart 1: Dollar Value of Passed Counterfeits Per Million Dollars in  
 Estimated Domestic Circulation



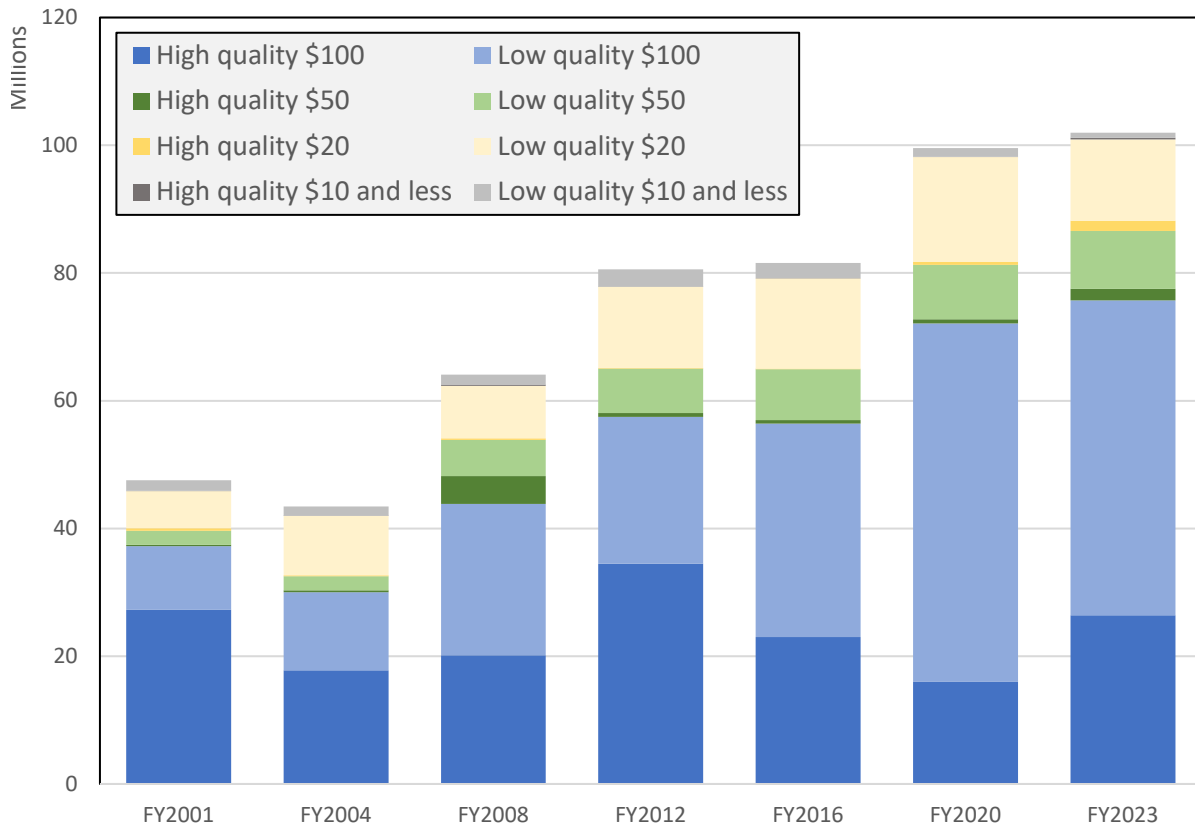
Note: For simplicity, the calculations in this chart assume that half of currency is in circulation abroad and half is in circulation domestically.

Source: USSS and U.S. Treasury.



It should be noted that during this period, passing of counterfeit currency increased much more slowly than currency in circulation: passed counterfeit currency rose by 2.5 times, but currency in circulation more than quadrupled, from about \$540 billion at the end of fiscal year 2001 to \$2.3 trillion at the end of fiscal year 2023. As a result, counterfeit passing *activity as a share of currency in circulation* declined over time, as shown in Chart 1.<sup>16</sup>

Chart 2: Dollar Value of Counterfeits Passed within the United States  
FY 2001 to 2023, by Denomination and Type, Selected Years



Source: USSS.

In this paper, I distinguish between higher quality and lower quality counterfeit notes. Higher quality counterfeit notes attempt to replicate some of the security features enough to fool banknote users. Lower quality counterfeit notes typically are produced using inkjet printers or copiers.

Chart 2 displays the dollar value of counterfeits reported by the USSS, by denomination and method of

<sup>16</sup> Judson (2024) and other papers estimate the share of U.S. currency held abroad. These estimates cover a wide range, but a share of half is well within this range. The share of currency held abroad has risen only moderately over this period, and so estimated growth of domestic U.S. banknote holdings is similar.

production; the darker shades for each denomination indicate the higher-quality counterfeit notes. At the domestic consumer level, the breakdown between higher-quality counterfeit notes and lower-quality counterfeit notes is significant. A lower-quality counterfeit note is usually of minimal quality with few to no attempts at simulating the security feature(s): a person with minimal training in counterfeit detection and currency authentication or a fairly simple machine should be able to detect the note readily with the unaided eye, and successful passing of the note occurs only when the recipient of the note fails to give it much scrutiny at all. Nearly 90 percent of the counterfeit notes in the \$20 and smaller denominations, which are those most commonly used by U.S. consumers, fall into the lower-quality category. The value of higher-quality counterfeits passed in the \$20 and smaller denominations in 2023 was less than \$2 million.

There is a policy implication to these figures that deserves to be highlighted: for U.S. residents, a minimal level of vigilance is enough to virtually rule out losses from counterfeiting. Consumers can familiarize themselves with the authentication features of genuine U.S. currency, including the distinctive feel of the paper, watermark, security thread, and color-shifting ink.<sup>17</sup> Similarly, retail outlets can provide authentication training to cashiers and might even consider the purchase of authentication devices ranging from black lights to point-of-sale systems if they are handling large quantities of cash.<sup>18</sup>

### 3.2 Federal Reserve Processing Data

Each of the roughly two dozen Federal Reserve Cash Offices collects data on its cash processing activities, including counterfeit detection.<sup>19</sup> From counterfeit detection rates and total processing figures, we can estimate confidence intervals for the incidence of counterfeits among the stock of dollars circulating actively at any given time.

---

<sup>17</sup> \$1 and \$2 denomination notes do not have the watermark, security thread, or color-shifting ink.

<sup>18</sup> It should be noted that some retail outlets have the capability to detect counterfeit banknotes but have non-confrontation policies in place because they would rather incur the relatively minor loss from the counterfeit note than have an in-store altercation and potentially risk victimizing bystanders. These firms view a ~~violent~~ confrontation or the loss of future business from bystanders as far greater than the initial loss of accepting the counterfeit. Losses from counterfeiting are small relative to overall corporate asset losses.

<sup>19</sup> The number of regional Federal Reserve Banks is fixed at twelve, but Federal Reserve Banks have branches, known as Federal Reserve Cash Offices. These offices can and do open and close as business needs evolve over time.

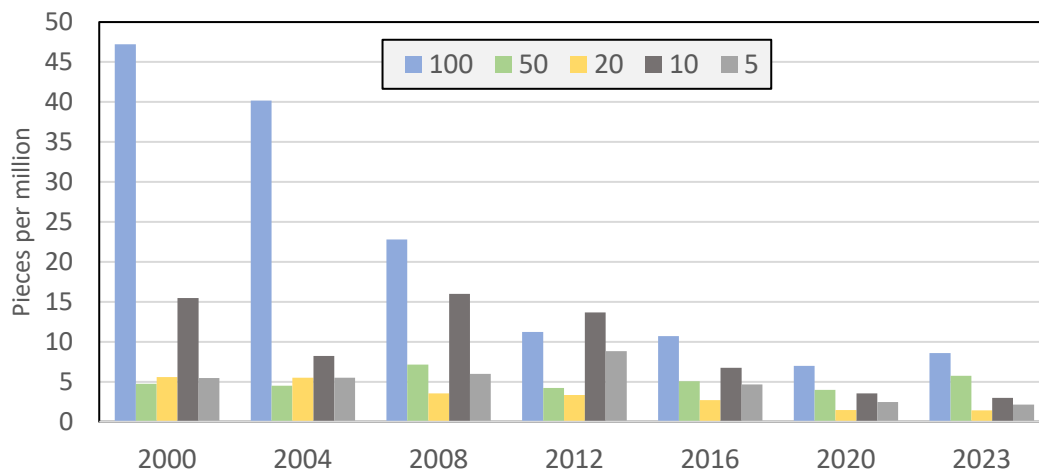
## 4 Estimating the Quantity of Counterfeit Dollars in Circulation

The estimates of counterfeiting rely on a variety of data sources with differing characteristics. Specifically, this paper makes three sets of calculations to estimate the amount of counterfeit currency now in circulation in the United States. First, I generate a **lower** bound for the total number of counterfeits by denomination based on Federal Reserve cash processing data, reported in Figure 1. Second, I generate an **upper** bound for counterfeits by denomination by extrapolating from Federal Reserve data to cover counterfeits found outside the Federal Reserve, though this extrapolation is necessarily tentative, as will be seen. Third, I generate a range of plausible estimates for all denominations based on the relative incidence of \$100 counterfeits and lower-denomination counterfeits. In all of these calculations, I adjust for the estimated share of banknotes held outside the United States. I conclude that the total value of counterfeits in circulation at any moment is likely on the order of \$15 million, or less than \$1 for every \$80,000 in domestic circulation, and is unlikely to exceed \$30 million, or less than \$1 for every \$40,000 in circulation.

### 4.1 Estimating the Minimum Stock of Counterfeits in Circulation: Federal Reserve Cash Processing Data

I estimate a lower bound on the number of counterfeits in circulation by extrapolating from the concentration of counterfeit notes in total notes processed by Federal Reserve Banks. Figure 3 displays suspected

Figure 3: Suspected Counterfeit Note Detection Rates in FRB Processing By Denomination



Source: Federal Reserve Board.

counterfeits detected per million notes processed by Federal Reserve Banks by denomination for selected fiscal years 2000-2023. A sharp decline in the incidence of counterfeit notes in processing is apparent, especially from fiscal year 2000 to fiscal year 2010 or so, years when the new design banknotes with higher security were supplanting older-design notes.<sup>20</sup>

Given these figures, the calculation is straightforward: the number of counterfeits in circulation is estimated as the product of the number of total notes in circulation and the rate of counterfeit detection in notes processed at the Federal Reserve Bank of New York. Table 2 presents estimates of the value of \$100 counterfeits in circulation based on the assumption that the notes processed at the Federal Reserve represent a random sample of \$100 notes in circulation and using a broad range of assumptions on the share of total U.S. currency held abroad.<sup>21</sup>

As seen in Table 2, the Federal Reserve processing data suggest that the total stock of \$100 counterfeits outstanding in fiscal 2023 was in the range of about \$2.8 million to \$8.5 million, a figure in the middle of the range estimated since 1996. Relative to currency in circulation, though, the decline is remarkable and parallels the reduction in counterfeits detected in processing: the 1996 upper estimate of \$8.3 million counterfeit \$100s in circulation out of a total of \$146 billion in estimated domestic circulation is one note in 17,600 while the upper 2023 estimate of about \$8.5 million in counterfeit \$100s in circulation out of \$1,120 billion in domestic circulation is one note in 131,800, a decline of over 85 percent.

Table 3 displays estimates of the stock of lower-denomination counterfeits in circulation using a similar method as above but assuming that all notes of these denominations are held domestically. Of course, this assumption is not strictly true, but even if only half of these denominations were held domestically, these very small numbers would be cut in half. These values are uniformly small relative to the estimates for counterfeit \$100s in circulation, totaling at most \$2 million each fiscal year against the figures of \$2 million to \$9 million for \$100s. These lower figures are due both to the smaller quantities of these denominations in circulation and the generally lower incidence of counterfeits detected in processing for smaller denominations. This lower incidence can be

---

<sup>20</sup> Only the USSS can conclusively determine that a U.S. dollar banknote is counterfeit, and thus notes that are identified as counterfeit in Federal Reserve processing are “suspected counterfeit.” The overwhelming majority of “suspected counterfeit” notes in Federal Reserve processing are subsequently confirmed as counterfeit by USSS.

<sup>21</sup> Although the estimates in Porter and Judson (October 1996) and U.S. Treasury (2000, 2003, 2006) put the estimated overall share of currency abroad between 55 and 70 percent, Feige (1996) presents estimates as low as 40 percent.

explained by the overall lower quality of lower-denomination counterfeits. Lower-quality counterfeits are easier to detect and are thus more likely to be detected before they are deposited at a Federal Reserve Bank.

**Table 2: Counterfeit Stock of \$100s Implied by Federal Reserve Processing Data  
Assuming Varying Shares of Currency Held Abroad**

Fiscal year	Stock of \$100s at end of fiscal year (\$B)	Assumed share abroad	Detection rate (notes per million)	Assumed \$100s in domestic circulation (\$B)	Implied counterfeits (\$M)
1996	243	40	56.7	146	8.3
		80		49	2.8
2000	369	40	41.3	222	9.1
		80		74	3.0
2004	496	40	21.1	298	6.3
		80		99	2.1
2008	573	40	17.3	344	5.9
		80		115	2.0
2012	812	40	12.3	487	6.0
		80		163	2.0
2016	1108	40	11.4	665	7.6
		80		222	2.5
2020	1504	40	8.4	903	7.5
		80		301	2.5
2023	1866	40	7.6	1,120	8.5
		80		373	2.8

**Table 3: Estimated Stocks of Counterfeit \$1, \$2, \$5, \$10, \$20, and \$50  
Notes Implied by Federal Reserve Processing Data  
Assuming All Held Domestically**

Millions of dollars

Fiscal year	\$1	\$2	\$5	\$10	\$20	\$50	Total
1996	0.00	0.00	0.01	0.1	0.4	0.3	0.9
2000	0.01	0.00	0.05	0.2	0.6	0.3	1.2
2004	0.01	0.00	0.06	0.2	0.6	0.3	1.2
2008	0.01	0.00	0.05	0.2	0.4	1.4	2.1
2012	0.01	0.00	0.09	0.2	0.5	0.4	1.2
2016	0.01	0.00	0.08	0.2	0.5	0.4	1.2
2020	0.01	0.00	0.05	0.1	0.4	0.3	0.9
2023	0.01	0.01	0.04	0.1	0.3	0.6	1.1

Note: Total might not equal sum of components shown due to rounding.

These estimates of counterfeit currency circulation are likely lower bounds for several reasons. First, notes sent to Federal Reserve Cash Offices are a relatively “clean” sample of the population of notes in circulation because they have typically already passed through several detection “screens” before reaching the Federal Reserve. If a counterfeit is deposited at a commercial bank, the probability that it will remain in the stock of notes sent on to the Federal Reserve is less than one, and most likely substantially less than one. A counterfeit that arrives at a commercial bank can be treated in one of four basic ways. First, if undetected, it could be recirculated or sent to the Federal Reserve. In the latter case, it would appear in Federal Reserve processing data.<sup>22</sup> Second, it could be detected as a counterfeit by the bank, and reported to the police and USSS. In this case, the note would appear in USSS statistics but not in Federal Reserve statistics. Third, it could be detected and returned to the depositor, an illegal and highly unlikely outcome within the United States. Fourth, a counterfeit could be detected and confiscated but either not reported to the police and USSS or not released, also an illegal and highly unlikely outcome within the United States. Counterfeit detection at commercial banks is generally quite good, so we believe that the majority of counterfeits that arrive at banks do not get deposited with the Federal Reserve. The observation that the USSS receives about thirty times as many passed counterfeits as the Federal Reserve would seem to support this assumption.

## **4.2 U.S. Secret Service Data and Counterfeit Stock Estimates**

All suspected counterfeit currency found in the United States, including that detected at Federal Reserve Cash Offices, must be turned over to USSS. As noted above, a lower bound for the estimate of \$100 counterfeits in circulation in the United States as of fiscal 2023 was in the range of \$2.8 million to \$8.5 million. Within the United States, about 30 counterfeit notes are detected domestically outside the Federal Reserve for each note detected by the Federal Reserve. An estimate of total counterfeit \$100s in circulation based on such ratios would be about \$80 million to \$255 million (\$2.8 million and \$8.5 million multiplied by 30).

This range, however, should be viewed as an extreme upper bound, for reasons similar to those discussed above. The counterfeits found outside the Federal Reserve are generally of lower quality and more easily detected

---

<sup>22</sup>It is assumed that the Federal Reserve detects all counterfeits in shipments it receives. For a discussion of this assumption, see Allison and Pianalto (1997).

(hence their detection outside the Federal Reserve).<sup>23</sup> Thus, they likely do not circulate for nearly as long as the counterfeits that survive until reaching the Federal Reserve.

I now return to the estimate of the total stock of counterfeits. Recall that extrapolation from Federal Reserve cash processing data yields an estimated minimum *stock* of at most \$9.6 million in counterfeits of all denominations in circulation. In contrast, the USSS data for fiscal year 2023 shown in table 1 indicate that the total value of counterfeit currency passed on the public in fiscal year 2023 was about \$102 million, roughly ten times what the Federal Reserve data would suggest. This discrepancy is in part due to the measurement methods: the calculations from Federal Reserve processing are on a *flow* basis, whereas the USSS data indicate the *stock* of counterfeits accumulated over the course of a fiscal year. To reconcile these numbers, we need to know how long it takes for a typical counterfeit to be identified in circulation and processed by the USSS. If, for example, the average counterfeit took one month before being processed by the USSS, then the annual USSS statistics could be consistent with as little as \$8 million in counterfeit currency circulating at any given time.<sup>24</sup> Thus, if we were willing to assume that counterfeits are identified (by consumers, retailers or banks), submitted to a reporting entity (police, bank, cash processor) and forwarded to the USSS for processing within about five weeks (one tenth of a year) of their first appearance, the “lower bound” Federal Reserve and USSS figures would be consistent with each other. Indeed, this lower-bound figure is consistent with USSS investigative data, which indicate that counterfeit notes rarely survive more than a couple of transactions.

Table 4 summarizes the estimates of counterfeit \$100s in circulation with a range of assumptions about the lifespan of a counterfeit note. Using the figure of an average lifespan of a counterfeit note of one year and the assumption of constant shares of counterfeit activity, we would arrive at an estimate of domestic steady-state stock of counterfeit \$100s of about \$76 million.

However, based on USSS investigative information, a lifespan of a year is highly unlikely and a lifespan of closer to one month is much more consistent with investigative experience. Thus, the one year figure is included

---

<sup>23</sup> While some lower quality counterfeits do appear in Federal Reserve processing, they are more likely to be caught by individuals, businesses, or banks before they reach a Federal Reserve Bank.

<sup>24</sup> That is, if each month \$8 million in counterfeits entered circulation, were then detected by the Secret Service in that month, and were then replaced with new counterfeits, the Secret Service could find \$8 million x 12 = \$96 million in counterfeit currency each year even though at any moment only \$8 million was in circulation.

only to illustrate how the calculation works. Thus, a more likely upper estimate of domestic counterfeits in circulation is in the \$20 million range, or less than one note out of every 40,000 \$100 notes in domestic circulation.

Longevity	Implied counterfeits in U.S. (\$M)
<b>1 month</b>	<b>6</b>
3 months	19
<i>1 year*</i>	<i>76</i>

Note: In fiscal year 2023, USSS received \$76 million in passed \$100 counterfeits.  
 \*This figure is considered unrealistic and is included only to clarify the calculation.

Table 5 displays the results of similar calculations for \$20s. The results for \$20s, as for \$100s, have a very wide range, but the value is substantially lower: from less than \$1.5 million to about \$14 million. As above, the figure corresponding to a counterfeit note lifespan of a year is shown only for illustration, and I consider the most likely estimate to be much closer to the lower end of the range, probably in the range of \$1 - \$3 million, or one to two counterfeit \$20 notes for every 100,000 \$20 notes in circulation. Since the volume of counterfeiting among the remaining denominations is in a range similar to or much smaller than that of \$20s, I omit tables for those denominations.

Longevity	Implied counterfeits in U.S. circulation (\$M)
1 month	1.2
3 months	3.5
<i>1 year</i>	<i>14.0</i>

Note: USSS data indicate that \$14 million in counterfeit \$20s were passed in the United States in fiscal year 2023.

I now return to the comparisons of Federal Reserve and USSS data. Recall that the USSS received about thirty times as many counterfeit notes as the Federal Reserve Banks received. This finding is consistent with either a lifespan of just a month or a bit more for the average counterfeit note. We do consider the range of estimates to be



bounds on the true number of counterfeits in circulation at a given time: the two data sources on counterfeits suggest that counterfeit \$100s is in circulation within the United States at any time likely total \$10 million or less, with a likely upper bound of about \$20 million. Estimates for \$20s would add perhaps \$1-\$3 million to that upper bound total and estimates for the remaining denominations would add at most another \$2-\$6 million, for a total of at the very most about \$30 million for all notes in circulation, or about one in 40,000 notes. The more likely estimate is that under \$15 million in counterfeit currency is in circulation at any time, or fewer than about 1 in 80,000 notes in domestic circulation.

## **5 Conclusion**

I develop a range of estimates for the quantity of counterfeit dollars in circulation domestically. Processing data from the Federal Reserve Bank of New York suggest a lower bound range of about \$2.8 million to \$8.5 million in value terms as of fiscal year 2023. Relative to total currency in U.S. domestic circulation, the upper bound is probably about \$30 million, or about 1 in 40,000 notes in in circulation. A midpoint estimate is in the neighborhood of \$15 million, less than one in 80,000 or about 12 cents per \$10,000 in circulation in the United States, is the most plausible given USSS investigative information about the relatively short average lifespan for a given counterfeit note. These figures are relatively small, but for U.S. consumers, the threat from high-quality counterfeits is even smaller: for the \$20 and smaller denominations, counterfeiting losses are tiny, at \$14 million in fiscal year 2023. Of these notes, less than \$2 million were high quality notes; the remaining notes were of lower quality and could have been detected by users with minimal inspection. Using the same calculations as above, the number of high quality small-denomination notes in circulation in the United States is even smaller: likely \$0.5 million or less, or less than one in 200,000 notes.

These estimates are substantially lower than the earlier (U.S. Treasury 2006) estimates of about 1 note in 10,000 for several reasons. First, the incidence of counterfeits detected in Federal Reserve processing has declined substantially for nearly all denominations, and especially for \$100s, over the past two decades. Second, passed counterfeit notes collected by USSS have declined relative to currency in circulation. Last, with additional investigative information, we are now more confident that the lifespan of a counterfeit is quite short on average, on the order of a month or so and certainly not more than three months.

Although the reduced incidence of counterfeiting is very good news, it is important to note that it comes about only with continued efforts in two directions. First, ongoing effort is required to reduce U.S. dollar banknotes'

vulnerability to counterfeiting—and improvements in counterfeiting techniques and technology—through the development of new designs with increased security. Second, ongoing public education raises awareness of the security features of genuine currency ~~and~~ can significantly reduce the acceptance rates of the lower-quality counterfeits.

## References

- Allison, Theodore E. and Rosanna S. Pianalto (1997), "The Issuance of Series-1996 \$100 Federal Reserve Notes: Goals, Strategies, and Likely Results," *Federal Reserve Bulletin* 83:7, pp. 557-564.
- Board of Governors of the Federal Reserve System (1996), "Report to Congress on Funds Availability Schedules and Check Fraud at Depository Institutions", October 1996.
- Board of Governors of the Federal Reserve System (2007), "Report to the Congress on the Check Clearing for the 21st Century Act of 2003," April 2007.
- Feige, Edgar L. (1996), "Overseas Holdings of U.S. Currency and the Underground Economy," in Susan Pozo, ed., *Exploring the Underground Economy: Studies of Illegal and Unreported Activity* (Kalamazoo, Michigan: W.E. Upjohn Institute for Employment Research), pp. 5-62.
- Green, Edward J., and Warren E. Weber (1996), "Will the New \$100 Bill Decrease Counterfeiting?" *Federal Reserve Bank of Minneapolis Quarterly Review*, Summer 1996, pp. 3-10.
- Jefferson, Philip N. (1998), "Seigniorage Payments for Use of the U.S. Dollar: 1977-1995," *Economics Letters* 58:2 (February 1998), pp. 225-230.
- Judson, Ruth A., and Richard D. Porter (2001), "Overseas Dollar Holdings: What Do We Know?" *Wirtschaftspolitische Blätter* 4 /2001.
- Judson, Ruth A., and Richard D. Porter (2004), "Currency Demand by Federal Reserve Cash Office: What Do We Know?" *Journal of Economics and Business* 56:4 (Special Issue, July-August 2004), pp. 273-285.
- Judson, Ruth A., and Richard D. Porter (2010), "Estimating the Volume of Counterfeit U.S. Currency in Circulation Worldwide: Data and Extrapolation," Federal Reserve Bank of Chicago Policy Discussion Series PDP 2010-2.
- Judson, Ruth A. (2012), "Crisis and Calm: Demand for U.S. Banknotes From the Fall of the Berlin Wall to 2011," Board of Governors of the Federal Reserve System International Finance Discussion Paper 2012-1058.
- Judson, Ruth A. (2017), "The Death of Cash? Not So Fast: Demand for U.S. Currency at Home and Abroad, 1990-2016," in International Cash Conference 2017—War on Cash: Is There a Future for Cash?, Deutsche Bundesbank.
- Judson, Ruth A. (2018), "Big note, small note: central bank digital currency and cash," in Gnan, Ernest and Donato Masicandaro (eds.), *Do We Need Central Bank Digital Currency? Economics, Technology, and Institutions*, SUERF Conference Proceedings 2018/2, pp. 33-45.
- Judson, Ruth A. (2024), "Demand for U.S. Banknotes at Home and Abroad: A Post-Covid Update," *Federal Reserve Board International Finance Discussion Paper 2024-1387*.
- Lengwiler, Yvan (1997), "A Model of Money Counterfeits," *Journal of Economics* 65:2, pp. 123-132.
- Parke, Darrel, and Laura Parker Gilles (1991), *A Comprehensive Assessment of U.S. Currency Quality, Age, and Cost Relationships* (Washington, D.C.: Federal Reserve System).
- Porter, Richard D. and Ruth A. Judson (1996), "The Location of U.S. Currency: How Much is Abroad?" *Federal Reserve Bulletin* 82:10, pp. 883-903.

Porter, Richard D. (1993), “Estimates of Foreign Holdings of U.S. Currency—An Approach Based on Relative Cross-Country Seasonal Variations,” in *Nominal Income Targeting with the Monetary Base as Instrument: An Evaluation of McCallum’s Rule*, Finance and Economics Discussion Series Working Study 1 (Board of Governors of the Federal Reserve System, March 1993).

Porter, Richard D. (1993), “Foreign Holdings of U.S. Currency,” *International Economic Insights* (November/December 1993), p. 5.

Porter, Richard D., and Gretchen C. Weinbach (1999), “Currency Ratios and U.S. Underground Activity,” *Economics Letters* 63:3 (June 1999), pp. 355-361.

Quercioli, Elena, and Lones Smith (2015), “The Economics of Counterfeiting,” *Econometrica* 83:3 (May 2015), pp. 1211-1236.

U.S. Department of the Treasury (2000), *The Use and Counterfeiting of U.S. Currency Abroad* (February 2000).

U.S. Department of the Treasury (2003), *The Use and Counterfeiting of U.S. Currency Abroad*, part 2 (March 2003).

U.S. Department of the Treasury (2006), *The Use and Counterfeiting of U.S. Currency Abroad*, part 3 (March 2006).

#### **Data Sources**

Federal Reserve Board Division of Reserve Bank Operations and Payment Systems (RBOPS). Confidential data from CRSV and CFET. This research was conducted with restricted access to these datasets, which contain monthly banknote processing data at Federal Reserve Cash Offices. The views expressed here do not necessarily reflect the views of RBOPS.

United States Secret Service (USSS). Confidential data from Criminal Investigative Division (CID) on counterfeit note passing activity. The views expressed here do not necessarily reflect the views of USSS.

United States Treasury. [Treasury Bulletin](#). Various issues. Table USCC-1—U.S. Currency and Coin Outstanding and in Circulation.