TREASURY AND FEDERAL RESERVE FOREIGN EXCHANGE OPERATIONS

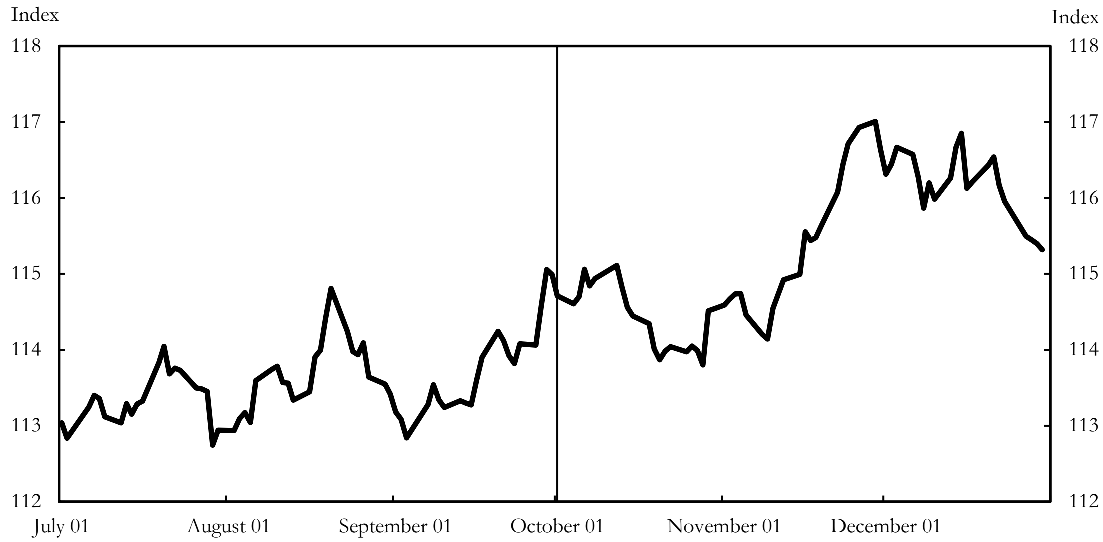
October – December 2021

During the fourth quarter of 2021, the U.S. dollar, as measured by the Federal Reserve Board's broad trade-weighted dollar index, appreciated 0.6 percent. The move primarily reflected U.S. dollar appreciation against the Japanese yen and the euro as U.S. shorter-dated yields rose relative to yields in the euro area and Japan following the Federal Reserve's signaling of a faster-than-anticipated withdrawal of policy accommodation. Broad U.S. dollar appreciation was limited by positive risk sentiment late in the quarter as concerns over the economic growth impact of a new COVID-19 variant waned as well as strength in some emerging market currencies as many emerging market central banks continued to increase their policy rates. On a bilateral basis, the U.S. dollar appreciated 3.4 percent against the Japanese yen and 1.9 percent against the euro. Meanwhile, the U.S. dollar depreciated 2 percent against the Swiss franc, 1.4 percent against the Chinese renminbi, 0.5 percent against the Mexican peso, and 0.4 percent against the British pound. The Federal Reserve and U.S. Treasury did not intervene in foreign exchange markets during the quarter.

This report, presented by Lorie Logan, Executive Vice President, Federal Reserve Bank of New York, System Open Market Account Manager, describes the foreign exchange operations of the U.S. Department of the Treasury and the Federal Reserve System for the period from October through December 2021. Katie Sullivan was primarily responsible for preparation of the report.

Chart 1

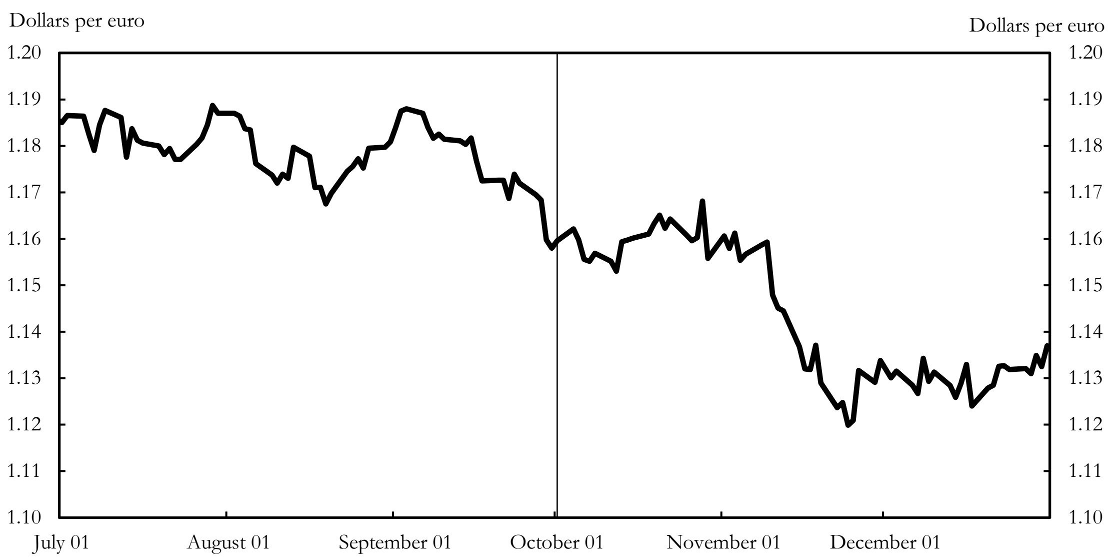
BROAD TRADE-WEIGHTED U.S. DOLLAR INDEX



Sources: Board of Governors of the Federal Reserve System; Bloomberg L.P.

Chart 2

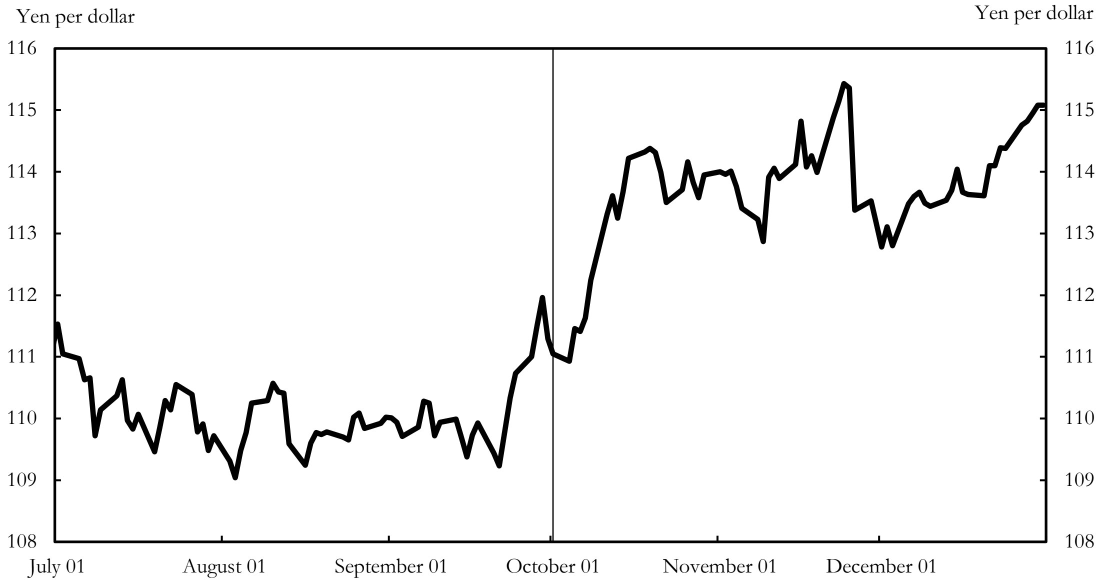
EURO−U.S. DOLLAR EXCHANGE RATE



Source: Bloomberg L.P.

Chart 3

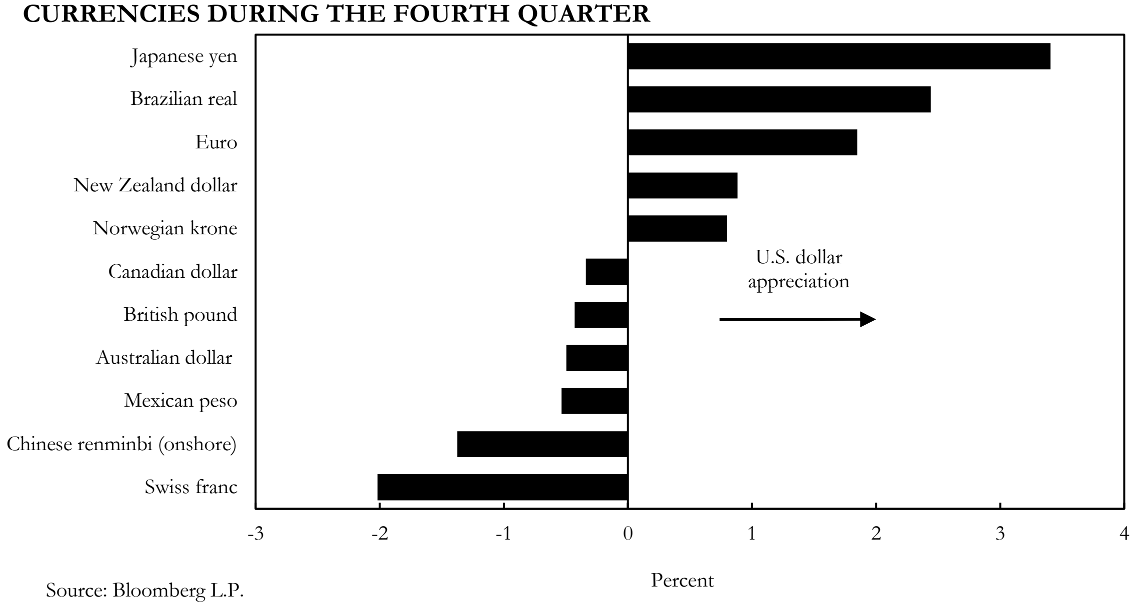
U.S. DOLLAR–YEN EXCHANGE RATE



Source: Bloomberg L.P.

Chart 4

U.S. DOLLAR PERFORMANCE AGAINST DEVELOPED AND EMERGING MARKET CURRENCIES DURING THE FOURTH QUARTER



Source: Bloomberg L.P.

U.S. DOLLAR APPRECIATES PRIMARILY ON WIDENING INTEREST RATE DIFFERENTIALS WITH EURO AREA AND JAPAN AMID SHIFTING U.S. MONETARY POLICY EXPECTATIONS

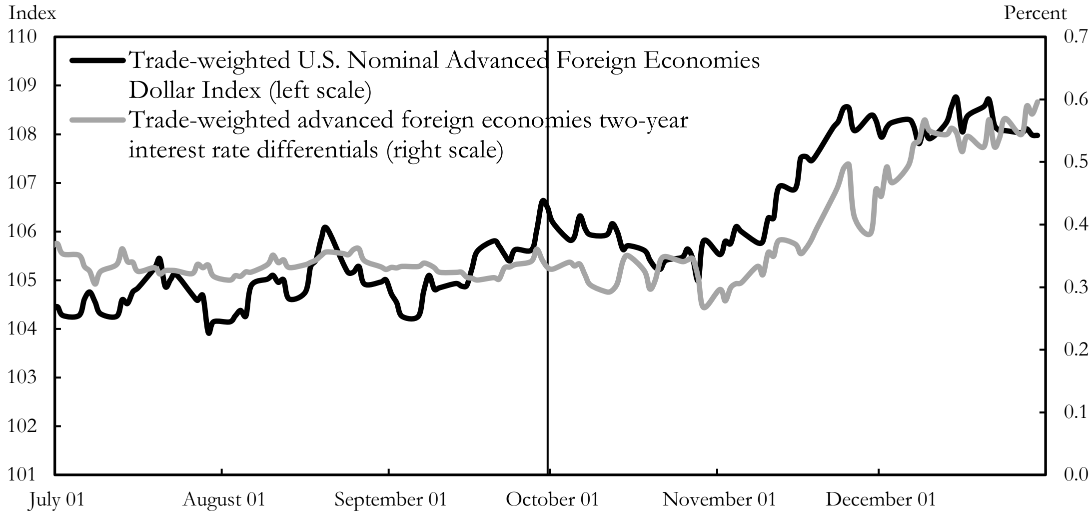
During the fourth quarter of 2021, the U.S. dollar, as measured by the Federal Reserve Board's broad trade-weighted dollar index, appreciated 0.6 percent, primarily reflecting U.S. dollar strength against the Japanese yen and euro as U.S. shorter-dated yields rose relative to yields in the euro area and Japan following the Federal Reserve's signaling of a faster-than-anticipated withdrawal of policy accommodation.[1] The U.S. dollar was mixed against other advanced economy and emerging market currencies, as broad U.S. dollar appreciation was limited by positive risk sentiment late in the quarter as concerns over the economic growth impact of a new COVID-19 variant waned as well as strength in some emerging market currencies as many emerging market central banks continued to increase their policy rates.

The dollar's appreciation was viewed as broadly consistent with the widening of shorter-dated interest rate differentials in favor of the United States during much of the fourth quarter as the Federal Reserve signaled its intention to scale back policy accommodation amid elevated inflation. Specifically, the dollar was seen as appreciating in response to market expectations that the Federal Reserve would increase its policy rate earlier than previously expected and announce plans to reduce its monthly pace of U.S. Treasury and mortgage-backed securities purchases. These expectations for asset purchase tapering were confirmed at the November Federal Open Market Committee (FOMC) meeting, where the FOMC announced that it would reduce its monthly purchases by $15 billion. Over the following month, the dollar continued to broadly appreciate as market participants expected the FOMC to further reduce its monthly purchase pace, following the above-target inflation print for October and policymaker communications suggesting a faster-than-anticipated removal of policy accommodation. In line with these market expectations, at its December meeting, the FOMC announced that it would double the pace of its asset purchase taper to $30 billion per month. Market participants also took note that officials' median rate forecast, as reported in the December Summary of Economic Projections (SEP), projected three hikes in 2022, up from the single rate increase projected in the September SEP. Despite the continued scaling back of policy accommodation at the December meeting, the dollar was little changed following the meeting, with market participants noting that the accelerated taper was expected and some also highlighting the lower-than-expected SEP median projection for the policy rate in 2024.

[1] The Federal Reserve's broad trade-weighted dollar index is based on twenty-six currencies, including major advanced market currencies and currencies of other important trading partners of the United States, including emerging markets.

Chart 5

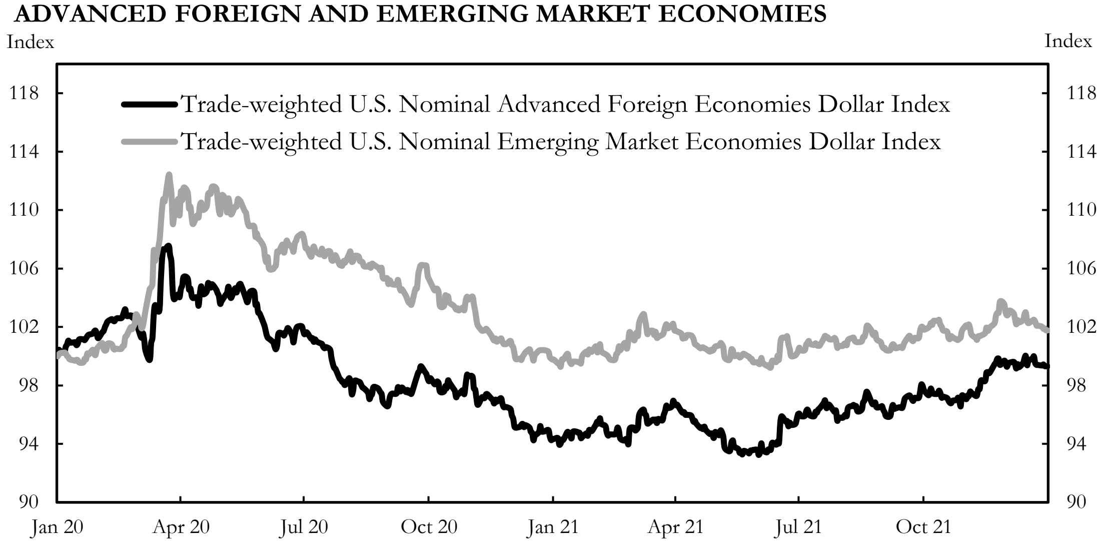
U.S TRADE-WEIGHTED ADVANCED FOREIGN ECONOMIES DOLLAR INDEX VERSUS TWO-YEAR INTEREST RATE DIFFERENTIALS



Sources: Bloomberg L.P.; New York Federal Reserve staff calculations.

Chart 6

U.S TRADE-WEIGHTED DOLLAR PERFORMANCE VERSUS ADVANCED FOREIGN AND EMERGING MARKET ECONOMIES



Source: Bloomberg L.P.

Note: Values indexed to January 1, 2020.

Over the quarter, the market's reassessment of the future path of Federal Reserve policy occurred against a backdrop of growing inflationary pressures. U.S. CPI data printed above 5 percent year-over-year throughout the quarter, amid continued supply chain bottlenecks. In particular, the release of the October CPI data in November, with a higher-than-anticipated headline print of 6.2 percent, led to broad appreciation of the dollar amid expectations of reduced policy accommodation by the Federal Reserve. Employment Situation Reports released over the quarter were not associated with any material moves in the dollar, as market participants characterized the reports as mixed overall but sufficiently robust to support market expectations for less accommodative Federal Reserve monetary policy.

Late in the quarter, the dollar was seen as receiving additional, albeit modest, support from safe haven-related flows following reports of a new variant of COVID-19, known as Omicron, which led the market to re-price risks to the global economic growth outlook. The news also drove a broadly risk-negative market response, with measures of implied foreign exchange volatility rising sharply to reach year-to-date highs. However, toward the end of the quarter, the dollar modestly depreciated against most major currencies, with market participants noting that concerns about the impact of Omicron were eased as few jurisdictions had imposed lockdown measures in response and global growth forecasts were little changed, on net. Commodity prices initially declined following the Omicron news but then mostly retraced as concerns subsided, leading to some volatility between the dollar and commodity-linked currencies. The dollar was mixed against commodity-linked currencies, appreciating against some, such as the Brazilian real, South African rand, and Russian ruble, but depreciating slightly against the Canadian dollar and Mexican peso.

EURO DEPRECIATES ON MONETARY POLICY DIVERGENCE; SWISS FRANC APPRECIATES ON SAFE HAVEN FLOWS

The dollar appreciated 1.9 percent against the euro in the fourth quarter amid expectations for the European Central Bank (ECB) to maintain a more accommodative monetary policy stance relative to the Federal Reserve. This policy divergence drove a widening in shorter-dated interest rate differentials between the United States and the euro area, where the yield spread between the two-year Treasury and the two-year German bund widened by nearly 40 basis points in the fourth quarter, hitting its widest level since early March 2020. At its December policy meeting, the ECB announced that net purchases under its Pandemic Emergency Purchase Program (PEPP) would cease in March 2022, but that the purchase pace under the separate Asset Purchase Program (APP) would temporarily increase after PEPP ends in order for the Bank to maintain an accommodative policy stance. While market pricing implied an ECB rate hike by Q4 2022, market participants focused on the ECB's communications, which indicated that rate hikes were unlikely in 2022.

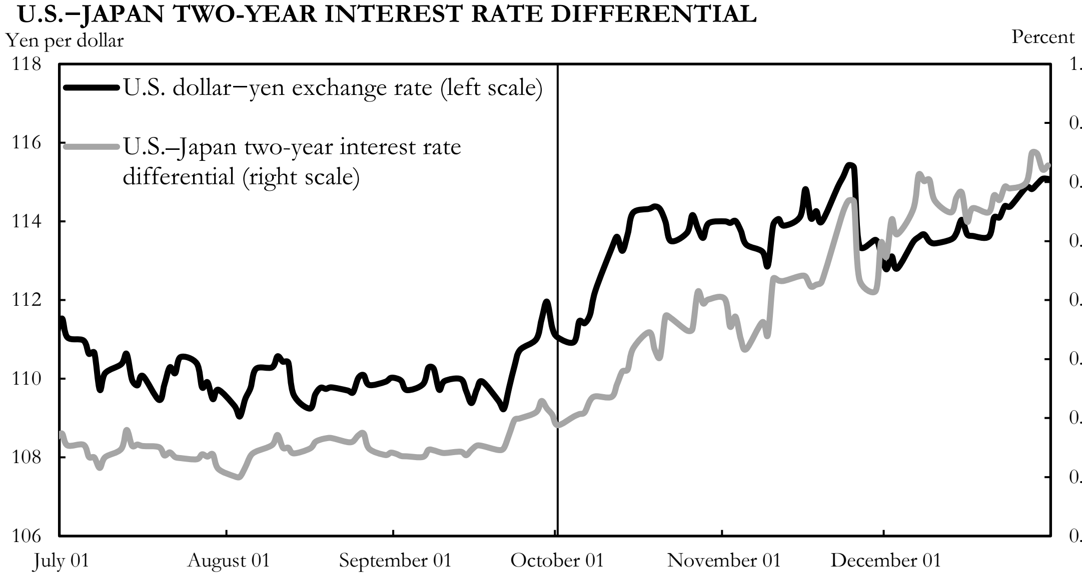
Elsewhere in Europe, the Swiss franc appreciated against the U.S. dollar and the euro by 2.1 and 4.0 percent, respectively, primarily on safe haven-related flows following news of the Omicron variant. Market participants took note of the franc's appreciation against the euro, as the euro-franc exchange rate is viewed by market participants as important for Swiss National Bank (SNB) policy, and interpreted the SNB's December meeting as signaling limited pushback on recent franc appreciation. Specifically, market participants highlighted the SNB's communications that the "highly valued" franc had "prevented a stronger rise in inflation."

JAPANESE YEN DEPRECIATES ON WIDENING INTEREST RATE DIFFERENTIALS AND CONTINUED MONETARY POLICY DIVERGENCE

The U.S. dollar appreciated 3.4 percent against the Japanese yen on net during the fourth quarter as shorter-dated interest rate differentials between the United States and Japan widened nearly 45 basis points to their widest level since early March 2020. The Bank of Japan (BoJ) maintained its accommodative policy stance, diverging from the Federal Reserve's December FOMC decision to start reducing monetary policy accommodation. While the yen appreciated broadly in late November as news of the Omicron variant drove a global risk-negative market response, most of this move retraced over the course of December as concerns over the economic impact of the new variant eased.

Chart 7

U.S. DOLLAR−YEN EXCHANGE RATE AND U.S.−JAPAN TWO-YEAR INTEREST RATE DIFFERENTIAL



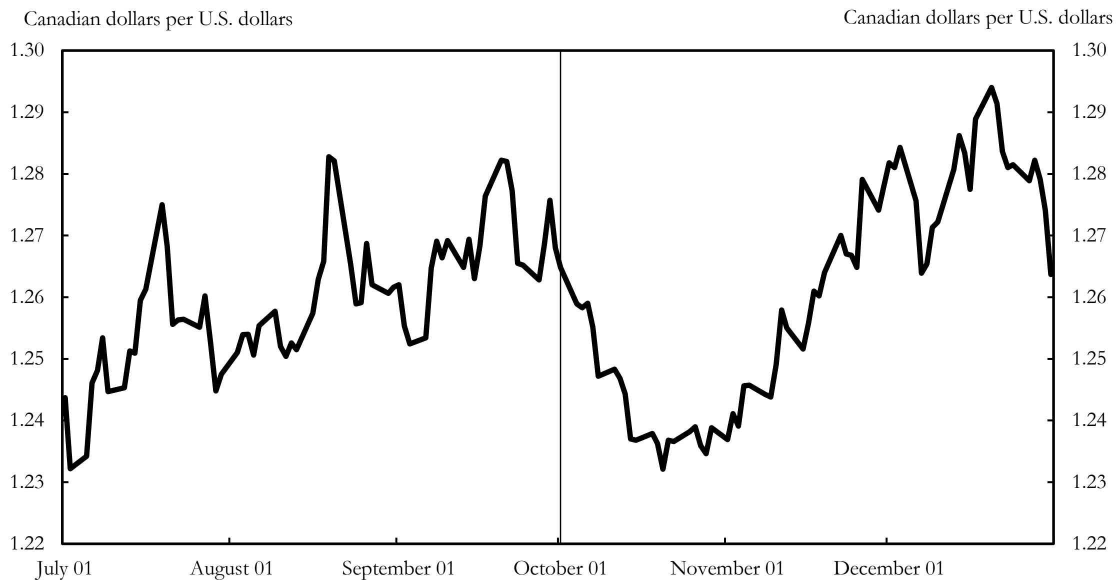
Sources: Bloomberg L.P.; New York Federal Reserve staff calculations

OTHER G10 CURRENCIES APPRECIATE MODESTLY ON LESS ACCOMMODATIVE CENTRAL BANK POLICY

In the fourth quarter, the U.S. dollar depreciated between 0.3 and 0.5 percent against the British pound, Canadian dollar, and Australian dollar on net, as the broad strength of the dollar was more than offset by policy actions by the Bank of England (BoE), Bank of Canada (BoC), and Reserve Bank of Australia (RBA). Announcements of those policy decisions drove increases in shorter-dated U.K., Australian, and Canadian sovereign yields. Specifically, in December, the BoE raised its policy rate by 15 basis points to 0.25 percent, which most market participants did not expect, and the British pound appreciated nearly 1 percent against the dollar on the announcement. Additionally, the BoC announced a conclusion of its asset purchase program at its October meeting and estimated that it would raise its policy rate in the middle quarters of 2022, and the RBA decided in November to remove its three-year sovereign yield target. The Canadian dollar appreciated nearly 1 percent against the U.S. dollar on the release of the BoC's October decision, while the Australian dollar appreciated 0.7 percent in the week leading up to the RBA decision as market participants started pricing in expectations for the removal of the yield target.

Chart 8

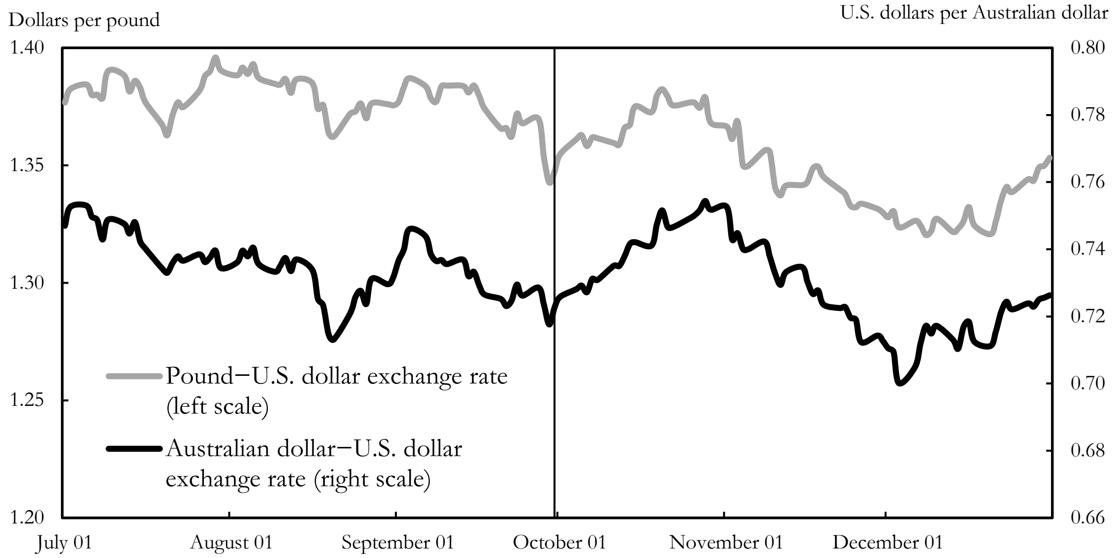
U.S. DOLLAR−CANADIAN DOLLAR EXCHANGE RATE



Source: Bloomberg L.P.

Chart 9

BRITISH POUND−U.S. DOLLAR EXCHANGE RATE AND AUSTRALIAN DOLLAR−U.S. DOLLAR EXCHANGE RATE



Source: Bloomberg L.P.

CHINESE RENMINBI APPRECIATES ON POSITIVE DATA, INVESTMENT INFLOWS

The U.S. dollar depreciated 1.4 percent against the Chinese renminbi over the fourth quarter, with market participants citing China's trade surplus data, which printed above expectations in October and November. Market participants also attributed renminbi appreciation to fixed income investment inflows to China driven by the inclusion of Chinese government bonds into the FTSE World Government Bond Index, as well as continued foreign inflows into Chinese equities. Following months of renminbi appreciation, the People's Bank of China increased banks' reserve requirement ratio on foreign exchange and set the daily U.S. dollar-Chinese renminbi fixing higher than market expectations in December, a move that market participants viewed as intended to slow the renminbi's appreciation.

EMERGING MARKET CURRENCIES MIXED AGAINST U.S. DOLLAR AS MANY CENTRAL BANKS INCREASE POLICY RATES FURTHER

The U.S. dollar was mixed against emerging market currencies in the fourth quarter, with the Federal Reserve's trade-weighted Emerging Market Economies Dollar Index declining 0.2 percent.[2] According to market participants, depreciation pressure on emerging market currencies from the Federal Reserve reducing monetary policy accommodation was offset by continued rate hikes by several central banks, including the central banks of Mexico, Brazil, South Africa, Chile, Colombia, Peru, the Czech Republic, and Poland. The U.S. dollar depreciated 0.5 percent against the Mexican peso over the fourth quarter, mostly after the Banco de México's larger-than-expected December policy rate hike. Emerging market currencies exhibited volatility later in the quarter around news of the Omicron variant, with implied volatility on major emerging market currencies rising sharply to either year-to-date highs or early 2021 levels.

The U.S. dollar appreciated a notable 49.6 percent against the Turkish lira over the fourth quarter, with market participants noting the Central Bank of the Republic of Turkey's policy rate cuts amid elevated inflation. The dollar partially retraced some of this appreciation against the lira in December after the Turkish government announced measures that market participants viewed as intended to stabilize the currency.

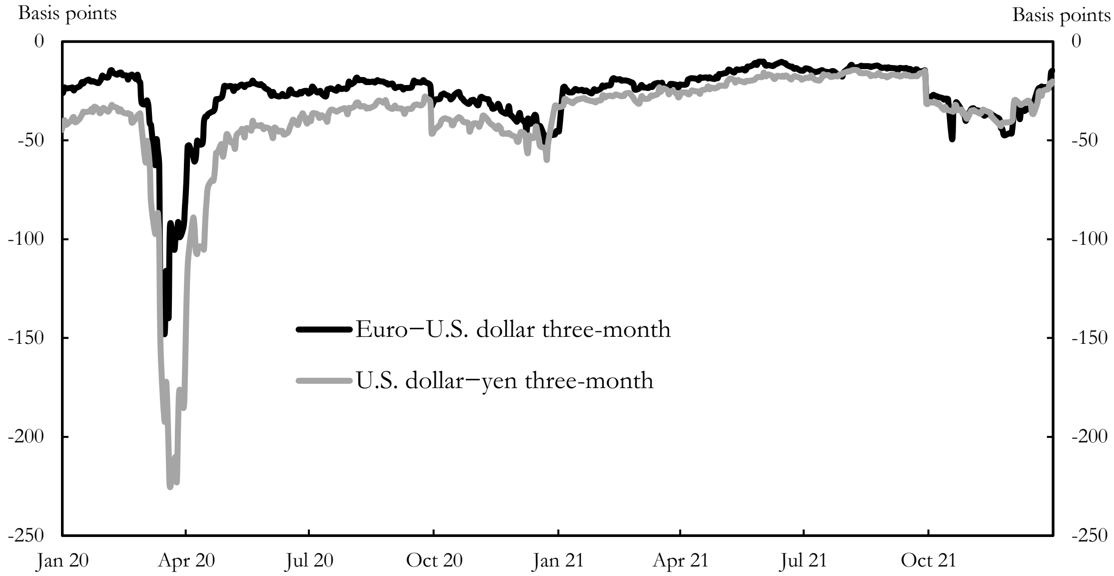
FOREIGN EXCHANGE SWAP MARKETS REMAIN STABLE OVER YEAR-END AMID ABUNDANT U.S. DOLLAR LIQUIDITY

Foreign exchange swap market pricing and trading conditions remained stable in the fourth quarter, with year-end trading conditions characterized as orderly and calm amid typically thin liquidity. In the weeks leading up to the year-end turn, short-term FX swap basis spreads for the euro-U.S. dollar and U.S. dollar-Japanese yen pairs were slightly narrower than levels observed during a similar period in 2020. The lower relative premiums to borrow dollars during the fourth quarter of 2021 were largely attributed to continued abundant dollar liquidity in the U.S. and offshore funding markets.

[2] The Federal Reserve's Emerging Market Economies Dollar Index, formerly known as the other important trading partners (OITP) index, is a weighted average of the foreign exchange value of the U.S. dollar against a subset of emerging market currencies. For more information on the index, see [Revisions to the Federal Reserve Dollar Indexes](#).

Chart 10

FOREIGN EXCHANGE SWAP-IMPLIED BASIS SPREADS



Source: Bloomberg L.P.

U.S. DOLLAR LIQUIDITY SWAP ARRANGEMENTS WITH FOREIGN CENTRAL BANKS

Aggregate swaps outstanding of the standing and temporary dollar liquidity swap arrangements with foreign central banks increased to roughly $3.3 billion by the end of the fourth quarter of 2021, compared to $0.3 billion at the end of the third quarter of 2021 and a peak of nearly $450 billion in late May 2020.[3]

With respect to the *standing dollar liquidity swap arrangements*, the Federal Reserve had a total of $3.3 billion of swaps outstanding as of December 31, of which $2.4 billion were with the SNB and the remaining $0.9 billion were with the ECB. The BoJ, BoC, and BoE did not have any dollar swaps outstanding at the end of the quarter.

With respect to the *temporary dollar liquidity swap arrangements*, the Federal Reserve had a total of $0.05 billion of swaps outstanding as of December 31, all of which were with the Banco de México. The Federal Reserve's temporary U.S. dollar liquidity swap line arrangements were initially put in place in March 2020 and were extended three times before expiring on December 31, 2021.

[3] Consistent with the current Authorization for Foreign Currency Operations, the Desk conducts small-value exercises for the standing liquidity swap arrangements as a matter of prudent advance planning. No inference about policy should be drawn from these exercises.

TREASURY AND FEDERAL RESERVE FOREIGN EXCHANGE HOLDINGS

The Federal Reserve and U.S. Treasury did not undertake any foreign exchange intervention operations during the quarter. As of December 31, the value of the Federal Reserve System Open Market Account (SOMA) foreign-currency-denominated assets totaled $20.4 billion, comprised of euro- and yen-denominated holdings. The value of the U.S. Treasury's Exchange Stabilization Fund (ESF) foreign-currency-denominated assets totaled $20.4 billion, comprised of euro and yen holdings.

Foreign Exchange Reserve Holdings

The Federal Reserve and U.S. Treasury invest their foreign currency reserves, which are held in the SOMA and the ESF, in a variety of instruments that yield market rates of return in their respective currencies and have a high degree of liquidity and credit quality. The *Authorization for Foreign Currency Operations* defines the permitted investments for the SOMA foreign currency portfolio. The Open Market Trading Desk of the Federal Reserve Bank of New York (the Desk) utilizes an investment framework for the management of the foreign currency assets. The framework involves a routine affirmation of objectives and constraints from policymakers. The Desk then utilizes an investment approach designed to meet those objectives to maximize return subject to maintaining sufficient liquidity and a high degree of safety.[4]

In terms of investment eligibility, the Federal Reserve and U.S. Treasury's foreign exchange reserves can be invested in German, French, Dutch, and Japanese government obligations and in instruments at official institutions, such as the Bank for International Settlements and foreign central banks. To the greatest extent practicable, the investments are split evenly between the SOMA and the ESF.

As of December 31, the U.S. dollar value of euro-denominated deposits and government securities held by the SOMA and the ESF decreased to $24.5 billion from $24.9 billion on September 30 and the U.S. dollar value of yen-denominated deposits and government securities decreased to $16.2 billion from $16.8 billion on September 30. These changes are largely driven by foreign exchange translation effects.

[4] Consistent with the current Authorization for Foreign Currency Operations, the Desk conducts small-value exercises for the foreign currency reserves as a matter of prudent advance planning. No inference about policy should be drawn from these exercises.

Table 1

FOREIGN CURRENCY HOLDINGS OF U.S. MONETARY AUTHORITIES
BASED ON CURRENT EXCHANGE RATES

Millions of U.S. Dollars

		Changes in Balances by Source				
	Carrying Value, September 30, 2021[a]	Net Purchases and Sales[b]	Investment Earnings[c]	Realized Gains/Losses on Sales[d]	Unrealized Gains/Losses on Foreign Currency Revaluation[e]	Carrying Value, December 31, 2021[a]
Federal Reserve System Open Market Account (SOMA)						
Euro	12,481	0	(11)	0	(215)	12,256
Japanese yen	8,383	0	0	0	(261)	8,122
Total	20,864	0	(11)	0	(476)	20,378

		Changes in Balances by Source				
	Carrying Value, September 30, 2021[a]	Net Purchases and Sales[b]	Investment Earnings[c]	Realized Gains/Losses on Sales[d]	Unrealized Gains/Losses on Foreign Currency Revaluation[e]	Carrying Value, December 31, 2021[a]
U.S. Treasury Exchange Stabilization Fund (ESF)						
Euro	12,462	0	(11)	0	(214)	12,237
Japanese yen	8,383	0	0	0	(261)	8,122
Total	20,845	0	(11)	0	(476)	20,359

Note: Figures may not sum to totals because of rounding.

[a] Carrying value of the reserve asset position includes interest accrued on foreign currency, which is based on the "day of" accrual method.

[b] Net purchases and sales include foreign currency purchases related to official activity, as well as repayments and warehousing.

[c] Investment earnings include accrued interest and amortization on outright holdings.

[d] Gains and losses on sales are calculated using average cost.

[e] Reserve asset balances are revalued daily at the noon buying rates.

Table 2

BREAKDOWN OF FOREIGN RESERVE ASSETS HELD

Carrying Value in Millions of U.S. Dollars, as of December 31, 2021

	U.S. Treasury Exchange Stabilization Fund (ESF)[a]	Federal Reserve System Open Market Account (SOMA)[a]
Euro-denominated assets	**12,237.4**	**12,256.1**
Cash held on deposit at official institutions	6,548.7	6,567.5
Marketable securities held under repurchase agreements[b]	0.0	0.0
Marketable securities held outright	5,688.6	5,688.6
German government securities	952.1	952.1
French government securities	2,936.1	2,936.1
Dutch government securities	1,800.5	1,800.5
Yen-denominated assets	**8,121.5**	**8,121.5**
Cash held on deposit at official institutions	7,563.7	7,563.7
Marketable securities held outright	557.8	557.8

Note: Figures may not sum to totals because of rounding.

[a] As of December 31, the SOMA and the ESF euro portfolios had Macaulay durations of 24.95 and 24.99 months, respectively; both the SOMA and ESF yen portfolios had Macaulay durations of 0.39 months.

[b] Sovereign debt obligations of Belgium, France, Germany, Italy, the Netherlands, and Spain are currently eligible collateral for reverse repo transactions.

Table 3

RECIPROCAL CURRENCY ARRANGEMENTS

Millions of U.S. Dollars

Institution	Amount of Facility	Outstanding as of December 31, 2021
	Federal Reserve System Open Market Account (SOMA)	
Reciprocal currency arrangement		
Bank of Canada	2,000	0
Banco de México	3,000	0
Standing dollar liquidity swap arrangement		
European Central Bank	Unlimited	940
Swiss National Bank	Unlimited	2,350
Bank of Japan	Unlimited	0
Bank of Canada	Unlimited	0
Bank of England	Unlimited	0
		3,290
Temporary dollar liquidity swap arrangements		
Banco Central do Brasil	60,000	0
Banco de México	60,000	50
Bank of Korea	60,000	0
Danmarks Nationalbank	30,000	0
Monetary Authority of Singapore	60,000	0
Norges Bank	30,000	0
Reserve Bank of Australia	60,000	0
Reserve Bank of New Zealand	30,000	0
Sveriges Riksbank	60,000	0
		50
Standing foreign currency liquidity swap arrangements		
European Central Bank	Unlimited	0
Swiss National Bank	Unlimited	0
Bank of Japan	Unlimited	0
Bank of Canada	Unlimited	0
Bank of England	Unlimited	0
		0
	U.S. Treasury Exchange Stabilization Fund (ESF)	
Banco de México	9,000	0
	9,000	0