

4. Foreign Exchange Market

The NT Dollar Exchange Rate

On a daily average basis in 2021, the NT dollar depreciated slightly against the renminbi (RMB) but appreciated against the Japanese yen, the US dollar, the Korean won and the euro. The trade-weighted nominal effective exchange rate index of the NT dollar increased by 2.95% on a daily average basis. The exchange rate movements of the NT dollar vis-à-vis each of the above foreign currencies are analyzed as follows.

During the course of the year, the NT dollar against the US dollar appreciated broadly. Early in the year, Fed Chairman Powell's remarks of continued commitment to monetary accommodation and Taiwan's strong export performance combined to drive the NT dollar higher against the US dollar. As US President Biden signed the US\$1.9 trillion relief package into law on March 11 and rising market optimism regarding a US economic recovery gave a further boost to the US dollar, the NT dollar depreciated against the US dollar. In April, as the Fed reiterated that it would maintain an easy monetary policy stance with the policy rate near zero and continued to downplay inflation risk, the US dollar thus weakened and the NT dollar appreciated. Entering the second half of the year, rising inflation led most Fed officials to forecast an earlier rate hike, and late in September, the Fed decided to start tapering bond purchases later in 2021; this propelled the US dollar higher and the NT dollar weakened. However, from late October, the NT dollar appreciated against the US dollar as Taiwanese companies net sold US dollars. At the end of 2021, the NT dollar appreciated by 2.95% against the US dollar compared with the end of the previous year. On a daily average basis, the NT dollar appreciated against the US dollar by 5.55% in 2021.

Relative to the euro, the NT dollar broadly appreciated during 2021. Early in the year, the COVID-19 pandemic worsened in Europe, which led investors to worry that the pace of the economic recovery would moderate. Therefore, the ECB announced a faster pace of asset purchases under the Pandemic Emergency Purchase Programme in March. In the second half of the year, as economic growth in the euro area was hindered by the spread of new virus variants, the ECB maintained an easy monetary policy stance by keeping its policy rates unchanged in late October, and President Lagarde underscored that the possibility of a rate hike in 2022 was very low. Because the pace of monetary policy normalization was slower than expectation among investors, the euro continued on its downward trend, and the NT dollar appreciated continuously against the euro. Compared with the end of the previous year, the NT dollar appreciated against the euro by 11.86% at the end of 2021. On a daily average basis, the NT dollar appreciated against the euro by 1.93%.

During the course of 2021, the NT dollar appreciated against the yen. In the first half of the year, Japan's government declared a state of emergency several times in response to rising COVID-19 cases, and the BoJ continued to maintain its accommodative monetary policy. From August on, higher commodity prices led to Japan running a trade deficit. Against this backdrop, combined with sluggish consumption, the BoJ pledged to continue an extremely accommodative monetary policy in October, and projected an inflation rate at well below its 2% target for two more years. Late in December, BoJ Governor Kuroda reiterated that it was too early to move toward normalizing monetary policy and maintained that the recent yen depreciation had more positive effects on Japan's economy, thereby leaving the yen under downward pressure, which drove the NT dollar against the yen to a yearly high of 0.2406. In sum, the NT dollar appreciated by 14.94% against the yen at the end of 2021 compared with the previous year end. On a daily average basis, the NT dollar appreciated against the yen by 8.50%.

In 2021, the NT dollar appreciated against the RMB in the first three quarters and depreciated toward the year end. In early January, in an effort to dampen RMB strength, the PBoC raised the upper limit on domestic non-financial firms' overseas lending to encourage capital outflows and lowered the upper limit for non-financial firms' cross-border financing amid efforts to rein in capital inflows. On May 31, the PBoC announced it would raise the reserve requirement ratio on foreign currency deposits by 2 percentage points to manage forex liquidity and ease appreciation pressure on the RMB. Later, China's tightening of pandemic control measures amid a wave of locally transmitted infections and the expanded regulatory crackdown on technology businesses and other sectors combined to weaken the RMB, resulting in the appreciation of the NT dollar against the RMB. Later, the RMB reversed previous losses as China's exports exceeded expectations in October and rebounded further following positive news of the virtual summit between US and China's leaders; therefore, the NT dollar against the RMB veered to depreciation. In December, the PBoC reduced the reserve requirement ratio for banks by 0.5 percentage points and cut its lending benchmark loan prime rate (LPR) as it moved to stimulate a slowing economy that has been weighed down

Annual Changes of NTD Exchange Rate Against Major Currencies

| | NTD/USD | NTD/EUR | NTD/JPY | NTD/CNY | NTD/KRW |
|------------------------------|---------|---------|---------|---------|---------|
| Exchange Rate (2021/12/30) | 27.690 | 31.338 | 0.2406 | 4.3406 | 0.0233 |
| Exchange Rate (2020/12/31) | 28.508 | 35.056 | 0.2765 | 4.3592 | 0.0262 |
| Annual Change | 2.95% | 11.86% | 14.94% | 0.43% | 12.68% |
| Average Exchange Rate (2021) | 28.022 | 33.143 | 0.2553 | 4.3452 | 0.0245 |
| Average Exchange Rate (2020) | 29.578 | 33.784 | 0.2770 | 4.2862 | 0.0251 |
| Annual Change | 5.55% | 1.93% | 8.50% | -1.36% | 2.31% |

Source: Department of Economic Research, CBC.

by sluggish consumption recovery and a prolonged property slump. In addition to dovish shifts, the PBoC raised the reserve requirement ratio on foreign currency deposits by 2 percentage points in an effort to stem RMB strength, leading the NT dollar to appreciate against the RMB. Overall, the NT dollar slightly appreciated against the RMB by 0.43% between end-2020 and end-2021. On a daily average basis, the NT dollar depreciated by 1.36% against the RMB when compared with the previous year.

During the course of the year, the NT dollar appreciated against the Korean won. Early in the year, the Korean economic outlook was clouded by a still-high COVID-19 case number. Lingering COVID-related risks also prompted the Bank of Korea (BoK) to stay accommodative, leading the NT dollar to appreciate against the Korean won. In May, the NT dollar continued to appreciate against the won as the Korean currency was weakened by large net foreign equity outflows. In the second half of the year, although two policy rate hikes by the BoK in August and November in order to stem the rapid rise in property prices and household borrowings bolstered the Korean won, supply shortages caused by China's export curbs of urea as well as the rapidly deteriorating local pandemic situation led the Korean won to weaken and maintained the NT dollar strength against the won. Compared with the end of 2020, the NT dollar appreciated by 12.68% against the Korean won at the end of 2021. On a daily average basis, the NT dollar appreciated by 2.31% against the won in 2021.

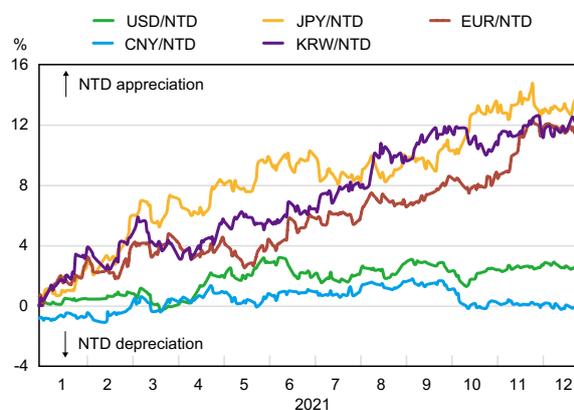
Foreign Exchange Trading

Trading in the Taipei foreign exchange market decreased in 2021. Total net trading volume for the year was US\$8,188.1 billion, representing a 1.0% year-on-year decrease. The daily average turnover was US\$33.0 billion in 2021.

In terms of trading partners, transactions between banks and non-bank customers accounted for 33.8% of the total turnover, while interbank transactions made up 66.2%, including 21.1% for transactions among local banks and 45.2% for those between local banks and overseas banks.

As far as traded currencies were concerned, NT dollar trading against foreign currencies accounted for 48.8% of the total trading volume, of which trading against the US dollar made up a dominant 47.1%. Transactions in third currencies contributed to 51.2% of the total trading

Percentage Changes of NT Dollar Against Major Currencies (Compared with End-2020)



Source: Department of Economic Research, CBC.

Turnover of Major Products in the Taipei Foreign Exchange Market

Unit: US\$million

| Year | Spots | Forwards | Forex Swaps | Margin Trading | Options | Cross Currency Swaps | Total |
|----------------------------------|-----------|----------|-------------|----------------|---------|----------------------|-----------|
| 2017 | 2,826,236 | 423,119 | 3,550,558 | 12,402 | 242,537 | 43,934 | 7,098,786 |
| 2018 | 3,111,414 | 567,790 | 3,992,873 | 7,876 | 249,254 | 58,354 | 7,987,560 |
| 2019 | 3,079,471 | 661,954 | 4,007,094 | 6,430 | 213,734 | 45,308 | 8,013,990 |
| 2020 | 3,408,766 | 503,730 | 4,110,852 | 7,265 | 205,969 | 34,458 | 8,271,041 |
| 2021 | 3,584,473 | 507,641 | 3,839,404 | 4,733 | 222,705 | 29,134 | 8,188,090 |
| 2020-2021 Annual Growth Rate (%) | 5.2 | 0.8 | -6.6 | -34.9 | 8.1 | -15.5 | -1.0 |

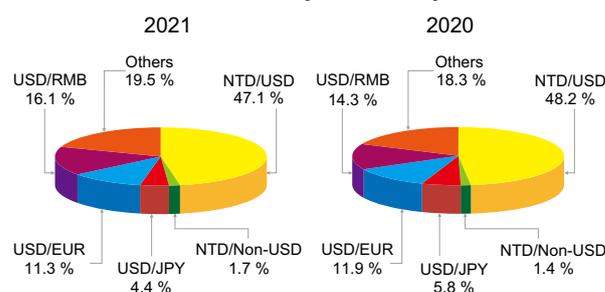
Source: Department of Foreign Exchange, CBC.

volume, with trading in currency pairs of USD-RMB, USD-euro, and USD-yen accounting for respective shares of 16.1%, 11.3%, and 4.4%. Compared with 2020, NT dollar trading against foreign currencies decreased by 2.7% while transactions in third currencies increased by 0.7%.

With respect to types of transactions, the major types were foreign exchange swaps and spots, accounting for 46.9% and 43.8% of total turnover, respectively. Compared with 2020, the trading volume of spots, forwards and options increased, whereas those of the other types decreased.

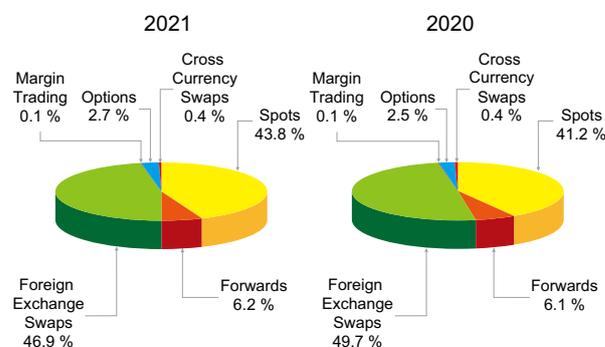
For other foreign currency derivatives, including forwards, swaps, and options based on foreign currency interest rates, stock price indices, commodity prices, and credit derivatives, total turnover amounted to US\$199.2 billion. Of this amount, interest rate-related derivatives accounted for the lion's share at 97.4% with US\$194.0 billion, increasing by 100.9% from the previous year. Interest rate futures accounted for the majority of this increase, up by US\$69.5 billion.

Composition of Foreign Exchange Transactions by Currency Pair



Source: Department of Foreign Exchange, CBC.

Composition of Foreign Exchange Transactions by Type of Product



Source: Department of Foreign Exchange, CBC.

Turnover of Other Products in the Taipei Foreign Exchange Market

Unit: US\$million

| Year | Interest Rate-Related Products | | | | Commodity-Related Products | Stock Index Options | Credit Derivatives | Total |
|----------------------------------|--------------------------------|-----------------------|--|----------|----------------------------|---------------------|--------------------|---------|
| | Interest Rate Swaps | Interest Rate Options | Foreign Currency Interest Rate Futures | Subtotal | Commodity Options | | | |
| 2017 | 49,453 | 11,412 | 116,911 | 177,776 | 2,802 | 121 | 857 | 181,556 |
| 2018 | 78,848 | 25,974 | 149,310 | 254,132 | 3,524 | 403 | 2,861 | 260,920 |
| 2019 | 70,809 | 12,429 | 96,751 | 179,989 | 3,771 | 384 | 969 | 185,113 |
| 2020 | 52,113 | 9,580 | 34,882 | 96,576 | 3,087 | 147 | 399 | 100,208 |
| 2021 | 78,981 | 10,716 | 104,342 | 194,040 | 4,143 | 437 | 618 | 199,238 |
| 2020-2021 Annual Growth Rate (%) | 51.6 | 11.9 | 199.1 | 100.9 | 34.2 | 198.2 | 54.9 | 98.8 |

Note: "Forward Rate Agreements" is excluded from the table because the turnover has been 0 since 2017.
Source: Department of Foreign Exchange, CBC.

Renminbi Business

Renminbi investment tools became even more diversified during 2021. By the end of 2021, there were 65 domestic banking units (DBUs) and 57 offshore banking units (OBUs) engaging in renminbi business. The balance of renminbi deposits amounted to RMB231.9 billion; renminbi remittances totaled RMB1,835.7 billion in 2021; renminbi settlement through the Taipei Branch of the Bank of China totaled RMB5,291.0 billion.

Renminbi Business Conducted by Financial Institutions

Unit: RMB Billions

| Business Items | Amount |
|---|----------|
| Deposit balance (including NCDs, end of 2021) | 231.9 |
| Total remittances (February 2013 to December 2021) | 14,838.5 |
| Total settlement through the Taipei Branch of the Bank of China (February 2013 to December 2021) | 37,936.0 |
| Total value of 194 RMB-denominated bonds issued (as of the end of 2021) | 132.7 |
| Accumulated premium receipts from RMB-denominated investment-linked insurance business (February 2013 to December 2021) | 21.2 |
| Accumulated premium receipts from RMB-denominated traditional insurance business (April 2014 to December 2021) | 8.4 |

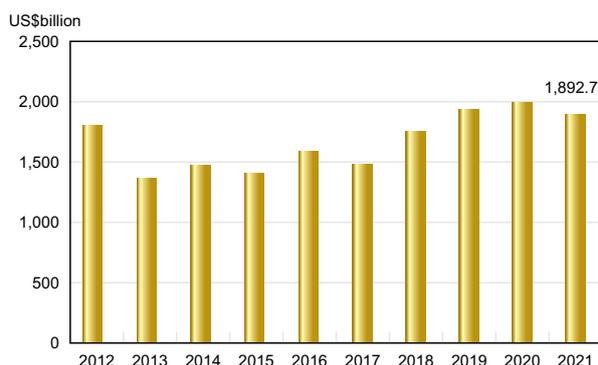
Source: Department of Foreign Exchange, CBC.

Foreign Currency Call Loan & Swap Markets

The transaction volume in the foreign currency call loan market in 2021 was US\$1,892.7 billion, a decrease of 5.0% over the previous year. Of this amount, US dollar transactions accounted for a dominant share with US\$1,774.7 billion, making up 93.8% of the total while decreasing by 7.2% from 2020. Renminbi transactions reached RMB561.2 billion in 2021, making up a share of 4.6% of the total and recording a year-on-year rise of 27.3% in volume. Japanese yen transactions reached ¥1,902.6 billion in 2021, representing a small share of 0.9% of the total with a year-on-year increase of 398.6% in volume. The amount of euro transactions amounted to around €1.7 billion, with a modest share of 0.1%. Other currencies accounted for a combined 0.6% of the total transaction volume. The balance of foreign currency call loan transactions at the end of 2021 was US\$60.1 billion.

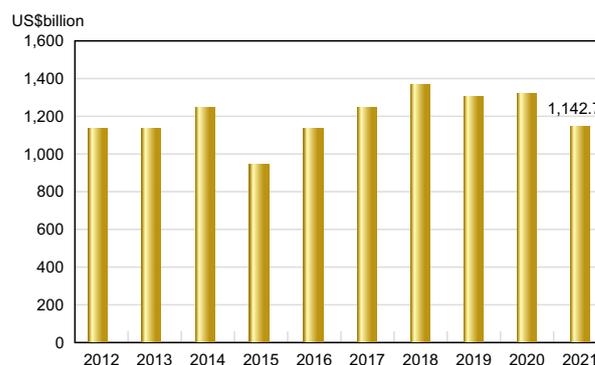
The volume of foreign currency-NTD swap transactions reached US\$1,142.7 billion, 13.1% less than 2020, while the balance was US\$301.4 billion at the end of 2021.

Transactions in the Foreign Currency Call Loan Market



Source: Department of Foreign Exchange, CBC.

Transactions in the Foreign Currency Swap Market



Source: Department of Foreign Exchange, CBC.

OBU Assets

There were 59 OBUs at the end of 2021, with 36 of them operated by domestic banks and the other 23 by foreign banks. The total assets of all OBUs increased to US\$249.9 billion at the end of the year, representing an increase of US\$10.5 billion, or 4.4%, from the previous year end owing to increasing portfolio investments and growing claims on financial institutions. Domestic bank OBUs made up 90.8% of these combined assets with an amount of US\$227.0 billion, and the OBUs of foreign banks accounted for 9.2% of the total with US\$22.9 billion.

In terms of the uses of funds, portfolio investments, at US\$93.7 billion, represented the majority share of 37.5% of total OBU assets. Loans to non-financial institutions came in second place,

accounting for 31.4% of total OBU assets. In terms of the destinations for funds, Asia accounted for the majority with a share of 53.3%, followed by America at 30.4%.

The OBUs' main source of funds came from due to financial institutions, making up 50.0% of total liabilities and equity. Deposits of non-financial institutions accounted for 41.8% of the total. The main funding origin of OBUs was Asia, accounting for 64.8%, followed by America with a share of 25.2%.

Forex trading turnover of all OBUs increased by 7.8% to US\$721.0 billion, of which US\$441.3 billion went for spot transactions, US\$130.5 billion for forward transactions, and US\$149.2 billion for forex swap transactions. Compared with the previous year, the growth rates of trading of spots, forwards, and forex swaps were 7.8%, 3.2%, and 2.8%, respectively.

For OBUs, total turnover of other derivatives products increased by 26.4% to US\$310.8 billion over the previous year. Of this amount, options transactions registered a turnover of US\$142.7 billion, making up 45.9% of the total.

Balance Sheet of OBUs in Banking System

Unit: US\$million

| Year / Month (End of month) | Loans to Non-financial Institutions | Portfolio Investment | Claims on Financial Institutions | Other Assets | Total Assets= Total Liabilities & Equity | Deposits of Non-financial Institutions | Due to Financial Institutions | Securities Issued | Other Liabilities & Equity |
|------------------------------------|---|-------------------------|--|-----------------|--|--|-------------------------------------|----------------------|----------------------------------|
| 2017/12 | 81,074 | 53,819 | 58,336 | 9,717 | 202,946 | 77,144 | 106,712 | 0 | 19,090 |
| 2018/12 | 82,161 | 59,180 | 48,552 | 11,074 | 200,968 | 78,704 | 96,622 | 0 | 25,641 |
| 2019/12 | 80,227 | 72,195 | 58,407 | 11,026 | 221,855 | 86,680 | 110,843 | 0 | 24,332 |
| 2020/12 | 78,995 | 86,016 | 61,925 | 12,524 | 239,459 | 91,094 | 124,885 | 0 | 23,480 |
| 2021/12 | 78,497 | 93,686 | 68,244 | 9,495 | 249,922 | 104,518 | 125,056 | 0 | 20,348 |
| 2020/12-2021/12 Growth Rate (%) | -0.6 | 8.9 | 10.2 | -24.2 | 4.4 | 14.7 | 0.1 | 0.0 | -13.3 |

Sources: 1. *Financial Statistics Monthly* (February 2022), CBC.
2. Department of Foreign Exchange, CBC.