

## Box B: Recent Developments in Foreign Exchange Markets

Since the outbreak of COVID-19, there have been periods of severe market dysfunction and illiquidity in a number of key financial markets, including those for foreign exchange. There were large and rapid changes in the major foreign exchange markets in mid March, along with periods of dysfunction in trading conditions. The Australian dollar depreciated to its lowest level since the early 2000s. Central banks responded forcefully to the deterioration in overall financial market conditions and introduced a range of policies to support market functioning, including in foreign exchange markets. This Box reviews these developments in the spot and swap markets with a focus on the Australian experience.

### Foreign exchange spot markets

The deterioration in conditions in global foreign exchange markets in March was particularly notable in the spot market, which saw a sharp widening in bid-ask spreads and a decline in market depth (i.e., the volume that can be traded with little-to-no price impact). Significant price moves across various global asset classes were associated with large foreign exchange flows, including rebalancing and hedging flows from 'real money' asset managers. Large flows were also observed around the time of daily fixings (notably the 4pm London fix), when benchmark reference exchange rates are calculated.<sup>[1]</sup> Some market participants brought forward transactions ahead of the usual month-end fixing in an effort to reduce a concentration of flows at peak times.

More generally, volatility and large volumes of transactions occurred at a time when intermediaries were constrained in their ability to warehouse risk. Internalisation rates declined for many market makers (reflecting a reduced willingness to hold open market positions) because volatility increased the risk that these intermediaries would be unable to profitably match opposing customer flows. Operational issues arising from lockdowns and working-from-home arrangements in key financial centres may have also contributed to the reduction in intermediaries' internalisation rates.

Disruptions to the functioning of foreign exchange spot markets extended to the market for Australian dollars, with bid-ask spreads widening to their highest level in years. As is common during periods of dysfunction, market participants noted that liquidity conditions in March were especially poor early in the Australian trading day but improved once Japanese markets opened.<sup>[2]</sup> The average daily trading range for the exchange rate also rose to its highest level in many years. Sharp moves over a short period of time were observed on a number of occasions (Graph B.1). For example, on 9 March the Australian dollar depreciated from US\$0.65 to US\$0.63 within a couple of minutes. In a similarly brief period on 19 March, it depreciated sharply again, from US\$0.57 to around US\$0.55, reaching its lowest level since the early 2000s in the process. Conditions in the spot market have improved since mid March, but are yet to fully normalise.

This recent period of market dysfunction bore some resemblance to the dislocations seen during the global financial crisis (GFC), but there were also differences. During the GFC, disorderly market conditions were sustained for long periods of time, reflecting persistently imbalanced flows which severely impeded price discovery. Over the most recent period, although there were a number of episodes where liquidity conditions were significantly disrupted, imbalances in order flow tended to be less pronounced and shorter in duration.

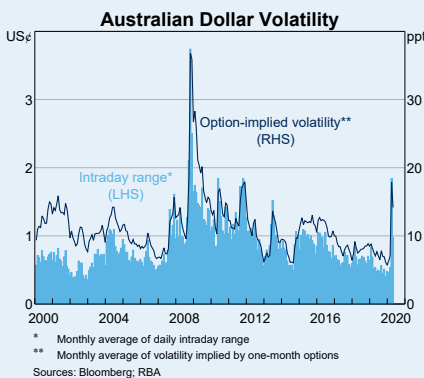
As often occurs during periods of heightened global risk aversion, there was considerable demand in the spot market for US dollars and the Japanese yen around mid March, at the same time that there was a broad-based depreciation in the Australian dollar. When compared with previous periods of financial market stress, the depreciation in the Australian dollar was initially comparable to that of the 2008 financial crisis (Graph B.2).

In recent months, movements in the Australian dollar have broadly followed those observed in global equity markets – depreciating in the March selloff, and appreciating in the subsequent rebound (Graph B.3). Similar co-movement was

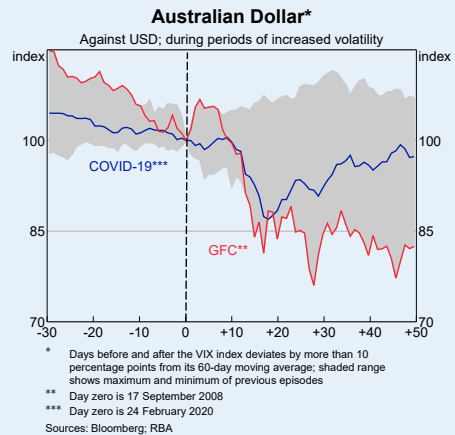
observed at times during the GFC. This partly reflects the dynamic hedging practices of Australian asset managers as they attempt to maintain pre-set hedging ratios on their foreign asset portfolios. For example, as US equity prices decline, asset managers would need to sell Australian dollars to maintain a constant hedging ratio.

Over this period, changes in other longer-term influences on the Australian dollar have been modest. This includes the declines in Australia’s yield differential with other advanced economies and bulk commodity prices. By contrast, these variables recorded

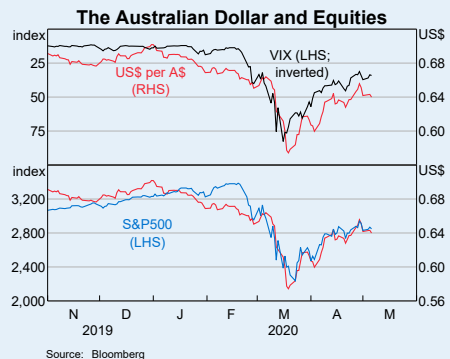
**Graph B.1**



**Graph B.2**



**Graph B.3**



large declines during the 2008 financial crisis (Graph B.4).

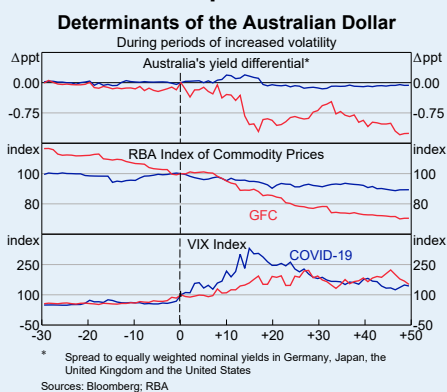
### Foreign exchange swap markets

Stressed conditions in March were also evident in the market for foreign exchange swaps. These markets are important as many non-US financial institutions fund their holdings of US dollar assets through the foreign exchange swap market. Strains here could be seen in the sharp increase in the cost of borrowing US dollars in the G3 foreign exchange swap market, as compared to rates available in US onshore markets (Graph B.5). This difference between ('offshore') borrowing rates implied in the swap market and those available onshore is known as the 'basis'.<sup>[3]</sup> For example, the basis derived from interbank rates on 3-month foreign exchange swaps in which Japanese yen were swapped for US dollars (i.e., where yen served as collateral for US dollar borrowing) widened by around 100 basis points in mid March. While the basis derived from interbank rates has since retraced the March widening in G3 foreign exchange swap markets (as US LIBOR has fallen), other measures of the basis, such as those that are derived from overnight indexed swap markets (therefore abstracting

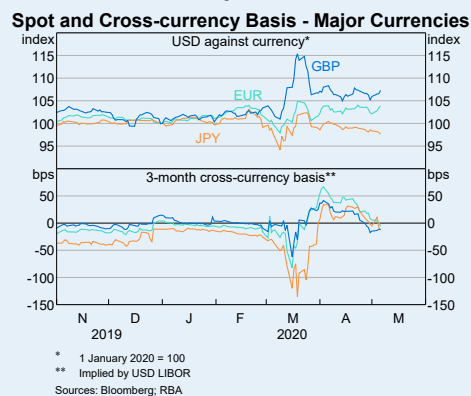
from interbank rates), continue to point to somewhat strained market conditions for non-US institutions seeking to borrow US dollars through the swap market.

Tightness in US wholesale bank funding markets also had potential implications for Australian banks' offshore funding costs. Australian banks regularly choose to acquire some of their funding from US wholesale debt markets and swap it back into Australian dollars; both of these markets – the wholesale debt and foreign exchange swap market – influence the overall cost of this funding. The sharp rise in unsecured US dollar money market rates in March (more than imbalances in the swap market per-se) increased the implied cost of obtaining Australian dollars through offshore funding markets (Graph B.6).<sup>[4]</sup> Australian banks refrained from raising new funding through this offshore channel around the same time that it became considerably more expensive than onshore funding (see below).

**Graph B.4**



**Graph B.5**



## The establishment of US dollar swap arrangements with the Federal Reserve

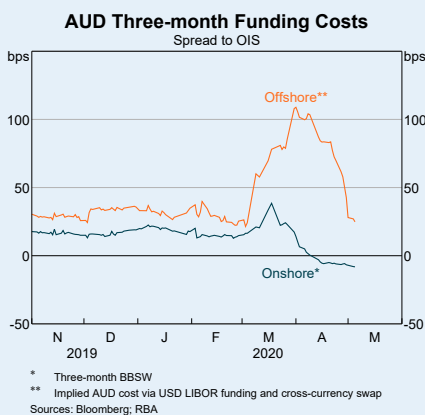
Conditions in global foreign exchange markets improved in response to policies introduced by a number of central banks over the second half of March. A key contribution was made by the coordinated action between the Federal Reserve and fourteen other central banks, including the Reserve Bank of Australia, to enhance the provision of liquidity through US dollar swap lines. The amount of US dollars borrowed through these facilities increased quickly to around US\$450 billion, with particularly strong take up by institutions in Europe and Japan that have an ongoing need to borrow US dollars (Graph B.7). The Federal Reserve has also made US dollars available to other central banks on an overnight basis in exchange for US Treasuries through a new repo facility. Nevertheless, the total value of US dollars extended to non-US based entities through swap lines over this period remained below that observed during the 2008 financial crisis (almost US\$600 billion). Since the introduction of these policy measures, the cost of borrowing US dollars in

swap markets has declined and measures of swap market functioning have begun to normalise.

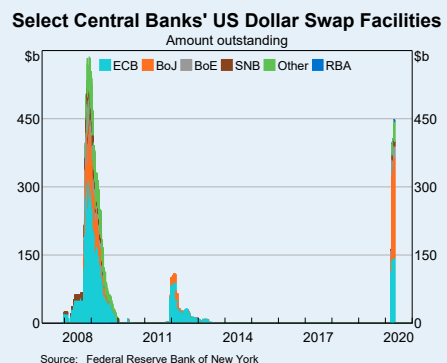
The Reserve Bank and the Fed established a temporary US\$60 billion swap line to provide US dollars in exchange for Australian dollars.<sup>[5]</sup> US dollars are made available to Australian market participants through a weekly auction conducted by the Reserve Bank in the form of US dollar repurchase agreements (repos), which are provided against Australian dollar-denominated securities.

Use of the swap line in Australia has been very modest so far. A little over US\$1 billion has been taken up; in each auction up to US\$10 billion was made available. This is in contrast to the significant usage elsewhere, most notably in Europe and Japan. There are a number of reasons for this difference. Australian banks typically obtain funding from US debt markets to supplement their domestic funding sources. This reflects a choice to diversify their funding base rather than a need to fund US dollar assets. As a result, Australian banks do not require access to US dollar funding when markets are disrupted, unlike some banks and other financial institutions in Europe and Japan

**Graph B.6**



**Graph B.7**



which need to roll US dollar borrowings to fund portfolios of US dollar assets. Hedging arrangements have also resulted in Australian banks benefiting from an additional supply of US dollars, as they receive US dollar payments when the Australian dollar depreciates.<sup>[6]</sup>

More generally, given their strong liquidity position, low domestic borrowing costs and only modest growth of assets, the large Australian banks have not needed to increase their net funding in wholesale markets abroad. ✎

## Endnotes

- [1] The fixing convention is a result of foreign exchange markets trading in a continuous 24-hour cycle, and so unlike securities markets, do not have an obvious end of day reference rate.
- [2] See Australian Foreign Exchange Committee (2020), 'Australian Foreign Exchange Committee Meeting Minutes', Sydney, 26 March. Available at <<https://afxc.rba.gov.au/meetings/afxc/2020/afxc-minutes-2020-03-26.html>>.
- [3] For more details on the use of cross-currency basis swaps, see Kent (2018), 'US Monetary Policy and Australian Financial Conditions', Speech The Bloomberg Address, Sydney, 10 April. Available at <<https://www.rba.gov.au/speeches/2018/sp-ag-2018-12-10.html#r7>>.
- [4] The OIS-implied and LIBOR-implied bases diverged notably in the AUD/USD swap market in March and April, when the OIS-implied basis turned negative (implying it was cheaper to obtain Australian dollars through swap markets than onshore) while the LIBOR-implied basis turned strongly positive (implying it was more expensive to borrow Australian dollars through the swap market than through onshore borrowing). This unusual divergence can be almost fully explained by the severe tightening in US LIBOR and financial commercial paper markets.
- [5] For more information about the swap arrangement, see RBA (2020), 'Reserve Bank of Australia and US Federal Reserve Announce Swap Arrangement', Media Release No 2020-09, 20 March. Available at <<https://www.rba.gov.au/media-releases/2020/mr-20-09.html>>.
- [6] See Bellrose, K and Norman D (2019) 'The Nature of Australian Banks' Offshore Funding' RBA *Bulletin*, December, viewed 23 April 2020. Available at <<https://www.rba.gov.au/publications/bulletin/2019/dec/the-nature-of-australian-banks-offshore-funding.html>>. See Berger-Thomson, L and Chapman B (2017), 'Foreign Currency Exposure and Hedging in Australia', RBA *Bulletin*, December, viewed 23 April 2020. Available at <<https://www.rba.gov.au/publications/bulletin/2017/dec/8.html>>.

