FX Column: Lumberjack and the AUD-USD TARF during the Corona Pandemic

Uwe Wystup, MathFinance AG, Frankfurt am Main

Whoever always wanted to be a lumberjack, may not have considered trading Target Forwards during the corona pandemic. Corona has become the general excuse for lack of work force, budget and motivation. Today I will tell a (not so) hypothetic story about an Australian lumber trading company exporting the Chinese harbors expecting USD payments and converting to AUD.

In January 2029 the AUD-USD spot was 0.7275, so one AUD was worth 0.7275 USD and the one year forward was around 0.7311, a contango scenario, where the USD rates were 2.65% (higher) and AUD rates were 2.20% (lower). The Australian exporter is a USD-seller and AUD-buyer. The currency risk can be hedged by a an outright forward, in which case lumberjack would receive AUD 13.678 M per USD 10.000 M.

The goal in currency risk management is often to beat the forward and trade a structured forward with a better rate. A common such structured forward is a target forward, where lumberjack agrees to sell 10M USD per fixing at a lower (=better) rate K=0.7000 if the fixing is above K and a leveraged 20M USD if the fixing is below K. The transactions accumulate a profit if the fixing is above K, and the target forward terminates at maturity or as soon as the accumulated profits reach a pre-specified target profit of 35 big figures (=0.3500 USD per AUD). The payoff per fixing is illustrated in Figure 1.

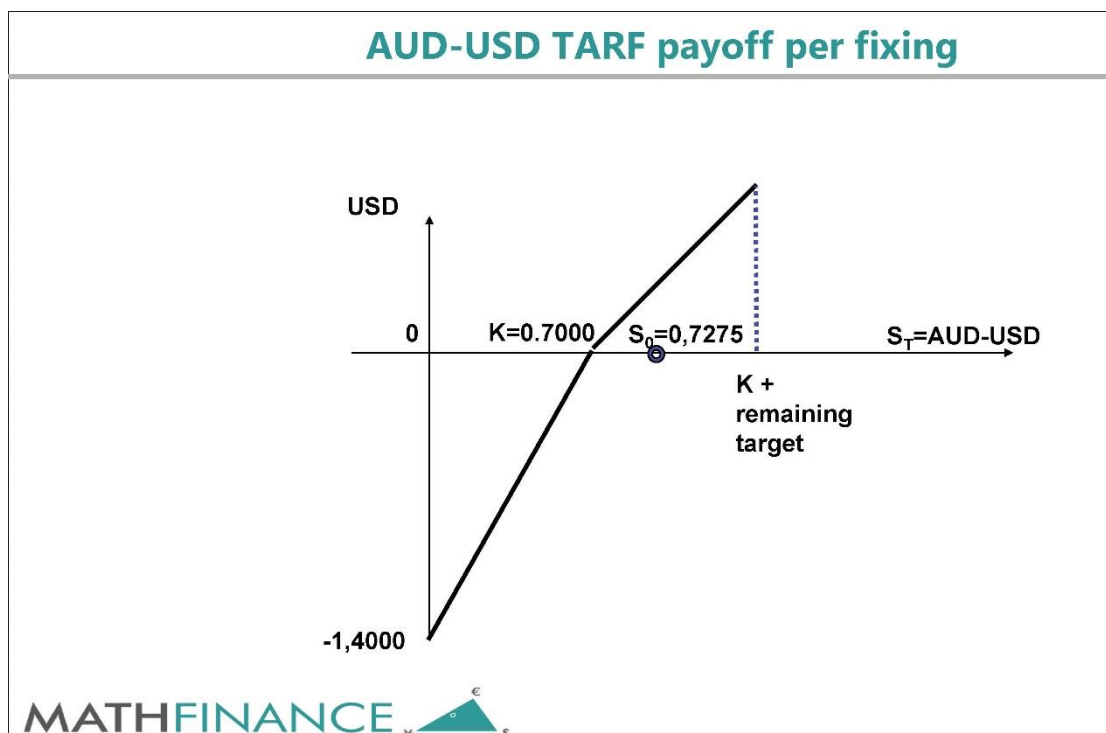Figure 1: AUD-USD TARF payoff per fixing with agreed exchange rate K and leverage factor 2.

Market Situation:

With a contango forward lumberjack had all reasons to be concerned about a further rising AUD-USD exchange rate, but being an exporter, this would hurt him, which is why on 31 January 2019 he opted for a target forward, agreeing to sell 7 charges of USD 10 M monthly starting from 31 January 2020. The agreed rate 0.7000 was more than 3 big figures below (i.e. better than) the forward rates seen for 2020 at the time. Given that the USD 10 M cash was expected to flow as usual, there was no risk, as he would always beat the forward rate. If spot was going to go higher, then he would sell at 0,7000 until the target is reached. If spot goes lower, then it would be good for him if he had kept an unhedged position at the first place (which is normally not a good idea). Overall, he thought he was ok, as shown in **Fehler! Verweisquelle konnte nicht gefunden werden.**.
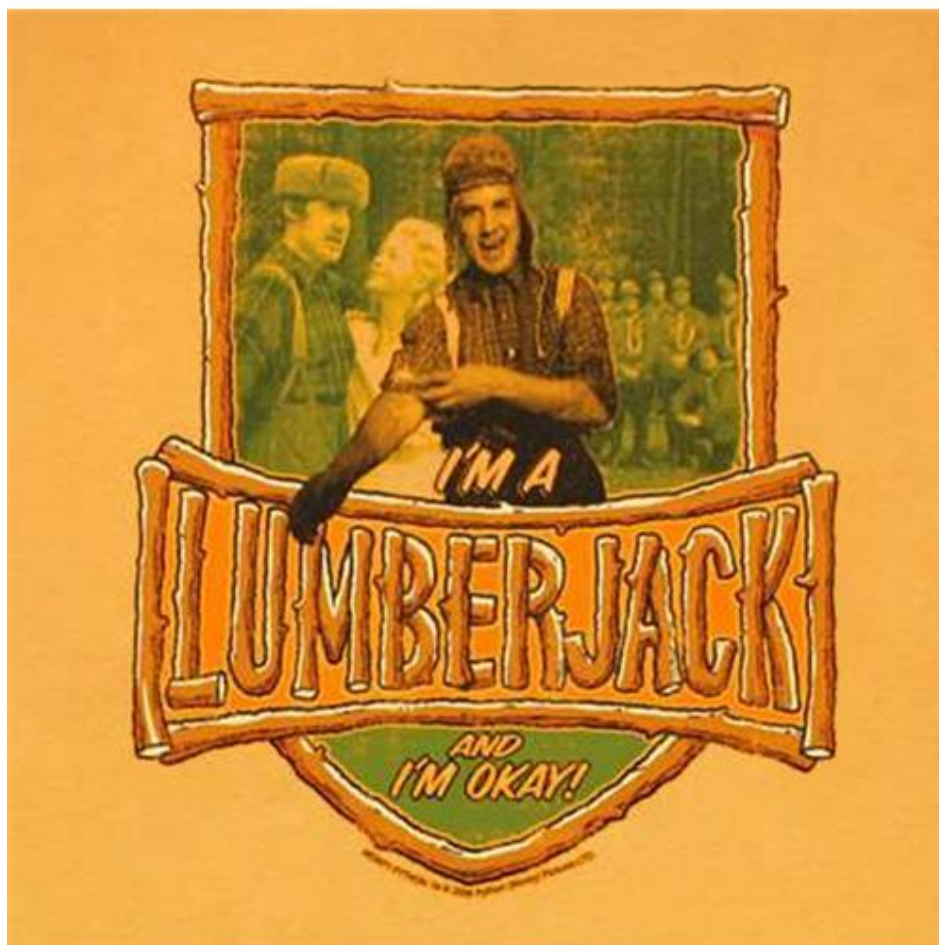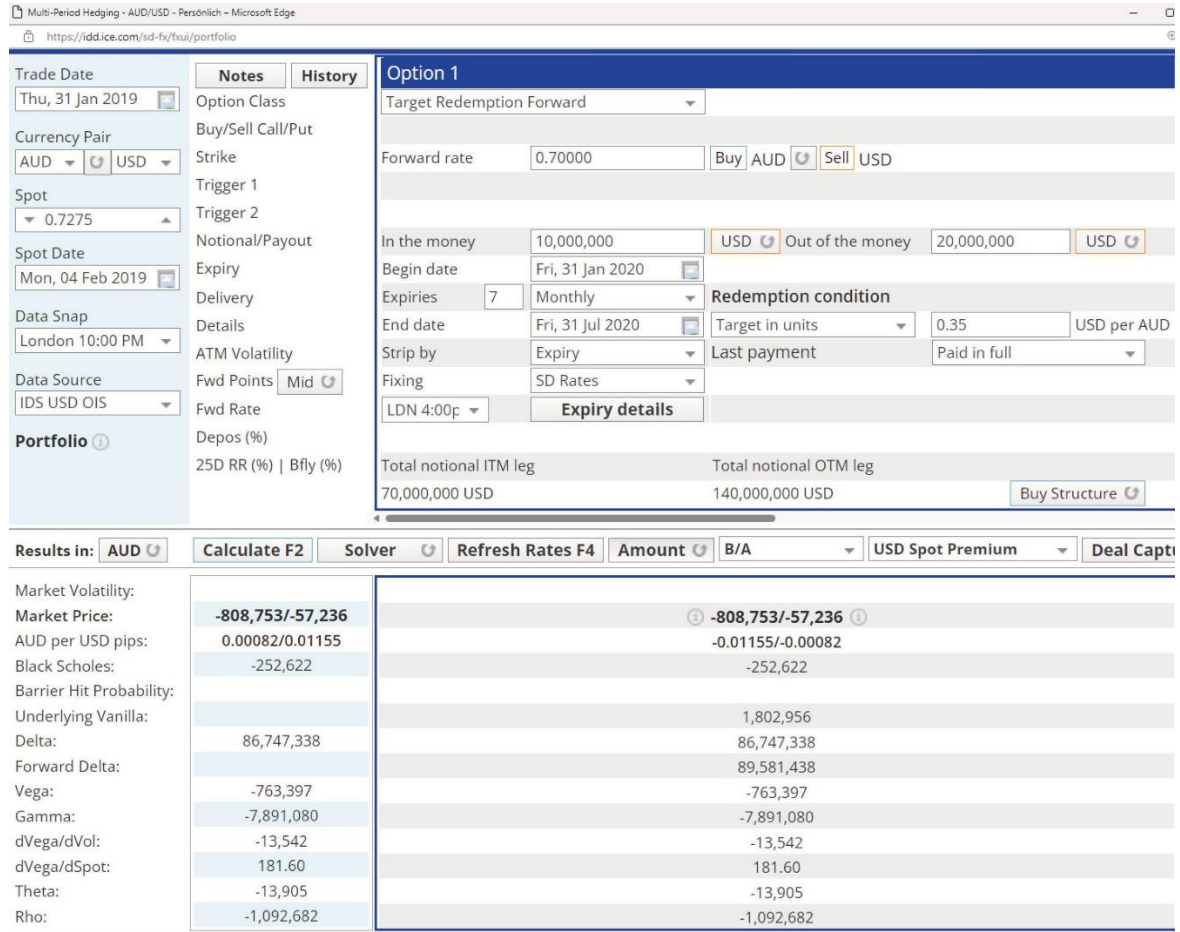

Figure 2: Monty Python's Lumberjack Song.

Pricing the AUD-USD TARF

The Target Redemption Forward (TARF) has become a standard product. ICE Data shows a traders' offer price of AUD -57,236, so with a sales margin of AUD 57,236, it would have traded at zero cost, see Figure 3. The sales margin might appear high but is actually less than 6 basis points in USD, so rather competitive. So overall, from the Australian exporter's view, a good deal: no initial cost, many cash-flows hedged and beating the forward.

Figure 3: Pricing an AUD-USD TARF in ICE (formerly SuperDerivatives) on Trade Date 31 January 2019

Impact of the Corona Pandemic

It was not foreseeable in the beginning of 2019 that in 2020 the harbors in China were going to be locked down, the lumber couldn't be delivered, and hence the USD bills were not paid. The assumption of the underlying cash flowing (client type treasurer, see my FX column on KIKO TARN Revival) was no longer valid, and at the same time, the AUD-USD exchange rate dropped significantly below the agreed rate K=0.7000 for the relevant period of the first half of 2020, see Figure 3. Normally, it is the underlying cash-flow that make target forwards (or any forward, even an outright forward) a non-risky hedging instrument for a corporate treasurer. The corona pandemic

changed the picture, and the treasurer non-voluntarily became a client type investor/speculator and had to buy the USD in the spot market to sell them at the higher (=worse) agreed rate 0.7000.

Figure 4: AUD-USD spot in 2019 – 2020; source: ICE Data

In my example, there are 7 agreed expiry dates, all with agreed rate 0.7000. Assuming the fixings would have been on the forward rates (the expected rates), then lumberjack would have made an AUD gain of 4.36 M (from a zero-cost product!). Taking the actual fixings, there would have been losses, which firstly caused the target forward to continue, and secondly doubled up losses because of the leverage 2.

The first 6 expiries would cause a total loss of AUD 10.64 M, as shown in Table 1. Forwards are listed as of 31 January 2019; fixings are closing prices in ICE Data.

expiry dates	agreed	forward	fixing	profit	loss	AUD loss	AUD gain
31.01.2020	0,7000	0,7311	0,6688	0,0000	-0,0312	-1.332.878	607.695
02.03.2020	0,7000	0,7314	0,6540	0,0000	-0,0460	-2.009.611	613.305
02.04.2020	0,7000	0,7317	0,6061	0,0000	-0,0939	-4.428.060	618.911
30.04.2020	0,7000	0,7320	0,6512	0,0000	-0,0488	-2.140.159	624.512
02.06.2020	0,7000	0,7322	0,6897	0,0000	-0,0103	-426.687	628.244
02.07.2020	0,7000	0,7325	0,6926	0,0000	-0,0074	-305.685	633.837
30.07.2020	0,7000	0,7327	0,7195	0,0195	0,0000		637.564
					total	-10.643.079	4.364.068

Table 1: Fixing Schedule of the AUD-USD TARF with P&L Calculation

Calculating the AUD loss is something for FX maniacs: The agreed notional is 10 M USD to sell, so domestic currency. The treasurer needs to first buy USD 10 M in the market at 0.6688 and pay for these AUD 14.952 M. Then, his USD 10 M are contractually converted to AUD with rate 0.7000, yielding AUD 14.285 M. The difference is -666,439 AUD, and with leverage factor 2, -1,332,878 AUD. Similarly, for the other fixings and the (expected) AUD gain. The payoffs in AUD are (other than in USD) in fact not linear, see my FX column on Common Misconceptions.

Unwind?

Other than accepting the loss arising from the cash flows smarty pants could have suggested to unwind the TARF pre-maturely in 2020 to avoid the cash flows. But with increased volatility and the TARF being already under water, the unwind cost would have been AUD 30 M on 20 March 2020.

Conclusion

1. The distinction between client type treasurer and investor is not static, especially now in a dramatically changing world.
2. Sometimes, currency risk is better hedged with options rather than (structured) forwards; and if a hedge is in place with forward or forward-like contracts, the risk must be monitored, and early exit strategies put in place.
3. Lumberjack is probably better off going shopping on Wednesdays.

References

- Wystup: FX Column – KIKO TARF Revival in Asia, Wilmott magazine, issue 107, May 2020, p. 12 -19
- Wystup: FX Column – Shedding Light on Common Misconceptions, Wilmott magazine, issue 104, November 2019, p. 16 -19