Title: The ABC of DCD

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As a response to the global financial crisis of 2007-08, most of the global central banks have ensured low interest rates (almost zero in US), to reflate the economies out of recession. And the low interest rate regime probably could continue till the central banks find concrete signs of self sustaining economic growth driven by private demand.

Investors having surplus cash have are thus being confronted with very low yields on the shorter tenor time deposits. The US LIBOR (1 month) for instance is around 0.34%. And many of times banks offer deposits with negative spreads over LIBOR. One product in such times that become popular was the **"Dual Currency Deposit (henceforth DCD)"** as a vehicle for maximizing yields on surplus money. DCDs are offered by many banks in international money markets as structured products with yields higher than the normal time deposits, but with little more of currency risk.

Let's quickly understand how a DCD works and what are the advantages, risks and pitfalls for investors.

What is the structure of a typical DCD? DCDs are foreign currency linked deposits which enable investors to "potentially" earn higher interest rates when compared with normal time deposits. In exchange for this higher return, the investor gives the Bank the right to repay his/her investment and its interest, in either the base or linked currency on the maturity (fixing) date , depending on exchange rate movements in respect of the underlying currency pair.

Let's understand some the terms referred above in a structure of generic DCD with a hypothetical example. First, some terms and the explanations of the same.

Table I: The ABC of DCD

Terms	Explanations	In our example
Base Currency	The currency in which the investor holds the amount to be invested for a month from now.	USD
Linked Currency	The currency in which the deposit will be repaid on maturity if the value of which goes below the prefixed conversion rate	Australian Dollars (AUD)
Conversion Rate	The prefixed exchange rate between the base and linked currency at which the deposit will be repaid, if the value of linked currency on maturity goes at or below the prefixed conversion rate.	AUD-USD 0.8300
Higher Interest Rate	The higher interest rate vis a vis normal deposits offered by the bank, which is usually paid in the base currency.	7% pa

Source: Delta Global Partners Research

The structure now becomes very easy to understand. Let's presume that an investor has surplus money of USD 100,000 (base currency) for a month (the tenor) and his bank is quoting him for a time deposit rate for that tenor at LIBOR which is around 0.34% pa.

His bank offers him another option of a DCD with AUD as the linked currency and an interest rate of 7 pa% (30/360 basis) for a month on USD 100,000. But with a caveat that, if the linked currency (AUD) vis a vis USD at maturity or on the fixing date (a month from now), remains at or below the prefixed conversion rate (0.8300). This conversion rate is different from the prevailing spot rate in AUD-USD. Let's presume that investor does accept the DCD proposal.

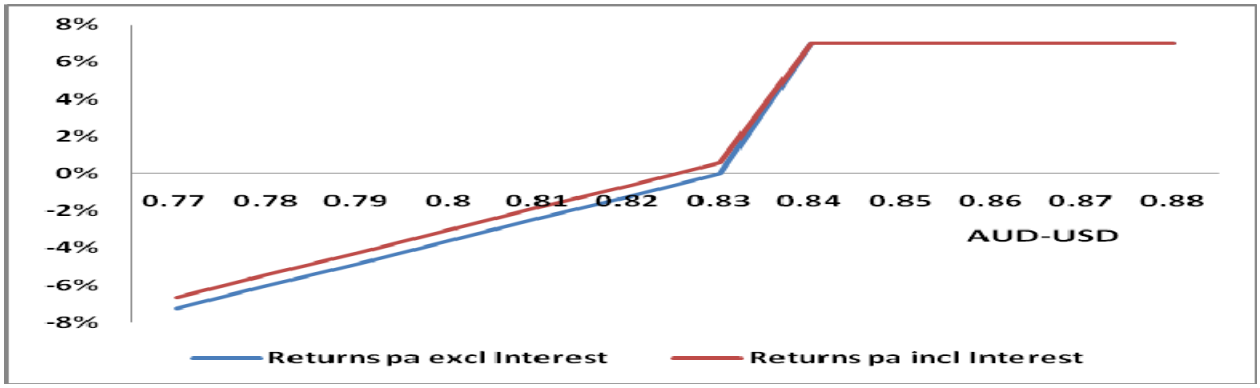
If he does in our example, there are two usual outcomes for the investor on the maturity of the DCD:

Chart I : Expected Outcomes of a generic DCD in our example

Outcome I	Outcome II
The AUD-USD rate remains at or above the prefixed conversion rate (0.8300) at maturity.	The AUD-USD rate depreciates at or below prefixed conversion rate (0.8300) on the maturity (fixing day) to say 0.8100.
The investor gets USD 100,000 on maturity and interest rate at 7% pa for a month, that's USD 575	The investor gets the interest in USD. That's 575 USD. The principal will be paid in AUD at the conversion rate, which is higher at 0.83 vis a vis the prevailing rate of 0.81. These AUD's if converted in USD at prevailing AUD-USD rate will be worth at USD 97,590. Thus the investor incurs a principal loss of USD 2,410
Returns in USD: 7% pa	Returns net of Interest in USD: -2.41%, Annualized -29%

Source: Delta Global Partners Research

Chart II : Expected Payoffs (returns pa) from DCD in our example



Source: Delta Global Partners Research

How are the DCDs structured by the bank? An investor can give his choice of linked currency and the tenor of the DCD to the bank. Out of the interest rate and conversion rate, if the investor gives one, the Bank usually gives tits quote for the other. In fact the interest rate offered by the bank is inter alia a function of the currency pair options pricing; the conversion rate (how far it is from the prevailing spot rate) and the tenor of the DCD. Usually the banks do offer DCDs in currency pairs which are more liquid and have relatively active options (OTC) markets.

Without getting into the technical's, what the bank does is, it structures a exotic option known as the "Barrier Option (Knock In)" in the underlying currency pair at the conversion rate (strike price) along with the deposit to the investor. The investor effectively sells (writes) a call option in favor of the bank which gets triggered only if the linked currency depreciates beyond the strike (conversion) price. This is how the investor receives the AUD in our example (Outcome II) at the higher conversion rate and thus suffers principal losses. The higher interest rate is nothing but the normal deposit rate on base currency plus the premium received by the investor for writing the call option. So option pricing remains key for the level of higher interest rate offered.

What are the typical benefits of investing in DCDs? The largest benefit is the higher interest rates vis a vis the normal time deposits.

And what are the risks and disadvantages? Mainly four of them:

- The DCDs carry the potential of loss of principal occurring due to the currency risks (volatility), if the linked currency falls substantially and breaches the conversion rate. *So taking a view on the linked currency remains a critical input before investing in DCD*. The payment of interest on DCDs is protected subject to credit risk of the bank, which can reduce some of the losses. But the capital is not.
- Liquidity of the DCDs becomes an issue, since usually premature withdrawals are not allowed. And if they are allowed, the costs (options reversal and interest rate differentials) associated with the same are very high. Lack of liquidity also gives rise to opportunity cost in form of better returns from other alternative investment products.
- The DCDs do carry "Credit Risk", since such kinds of deposits don't have the usual regulatory insurance cover or support. Any default on banks part will lead to losses.
- The DCD structure does not allow any participation in rise of the linked currency, if any. (Chart II)

How should investors analyze DCDs before investing?

The most crucial risk in holding a DCD is the risk of losing a part of principal due to adverse currency movements as discussed in our example on Page 2. We can afford to ignore the Liquidity and Credit Risks for the time being, which are well understood.

How should investors balance the reward of excess returns and the potential risk of a loss in principal? Assuming that the base currency is USD, a normal time deposit for 1 month could have given the investor around 0.34%. As against that DCD now dangles a carrot of 7% pa, an excess return of 6.66%, but with a potential loss of principal.

We try and quantify this risk of potential loss (large currency move) by using the "Historical or Realized volatility" of the pair AUD-USD for the last one month. Though one can use longer term volatility figures too. The volatilities of the currency pair implied from the quoted option prices can also be used. By comparing the risk with potential excess returns, we arrive at the "*Excess Returns per Unit of Risk*" (Column 7 in Table II below). This analysis comes handy to compare two or more DCD proposals.

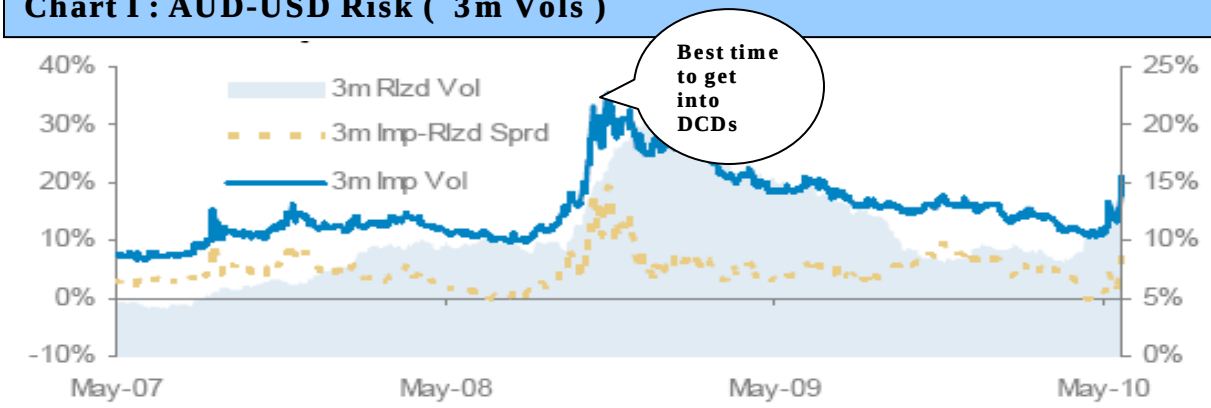
Table II: Analyzing Risk-Rewards from DCDs

	Conversion Rate (1)	1m Historical Volatility (2)	Spot Rate (3)	Conversion Rate app/(depn) from Spot (4)	Offered Interest pa (5)	Excess Returns Expected pa* (6)	Excess Returns per unit of Risk (7)=(6)/(2)
AUS-USD	0.8300	18%	0.8500	-2.35%	7.00%	6.66%	**0.370**
GBP-USD	1.4472	16%	1.4800	-2.22%	4.00%	3.66%	**0.229**
USD 1m LIBOR	0.34%						

*** Over USD 1m LIBOR** **Source: Delta Global Partners Research (For illustration only)**

And the rule here is "*Higher the excess returns per unit of risk, better are the expected risk adjusted returns*". We have compared (Table II) the AUD-USD example with a hypothetical proposal of a DCD with GBP-USD as linked and base currencies. Given a choice and everything else remaining the same, an investor should go for the AUD-USD proposal since the risk adjusted returns are expected to be higher. To understand the concept of volatility in our example, we have reproduced the historical Volatility graph of AUD-USD below. When an investor buys a DCD, effectively his position is "Short Volatility", viz he has shorted the risk.

Chart I : AUD-USD Risk (3m Vols)



Source :Morgan Stanley Research

So if volatility rises, the investor chances of losing a part of the principal rises too. *And therefore it makes sense to buy DCDs in a currency pair where the historical volatility levels are already much higher as compared to its long term averages and are likely to fall from there*.

A little more on Volatility for the geeks: The 25 delta risk reversal quotes (available on Bloomberg, Reuters etc) are also helpful in judging the market positioning and larger directionional moves expected by option traders in the underlying currency pair. Risk reversals are usually priced as the difference in implied volatility of the put minus that of the call price. In theory, if a currency is expected to depreciate, puts would be favored over calls and the purchaser of the puts would pay a higher volatility relative to calls.

The economic theory of "Uncovered Interest Rate Parity" tells us that the currency with higher interest rate will depreciate vis a vis the currency with lower interest rates. Investors have to take cognizance of the same while investing in DCDs. In some cases, the investors would like to take long term exposure or have a trade driven requirement of the linked currency, may invest in DCDs.

Very often investors' tend to roll over the DCDs with fresh terms. Every roll over should be regarded as a new proposal, which should be analyzed with the same intensity.

To conclude, the DCDs may offer higher returns over the normal deposit, but the higher returns don't come in for free. There do exist "fat tail" risks, viz the risk of large currency moves especially in an uncertain environment such as the current Europe Debt Crisis or a war between North and South Korea (assisted by US). It's very important to balance the risks and rewards in evaluating a DCD proposal, especially the choice of the linked currency.

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