

15.3.2.1 The Situation

Suppose the US housing market is in turmoil, and there are “hints” that a collapse may occur. In your experience, if a collapse occurs, there is the likelihood of a financial markets calamity, likely resulting in a lack of liquidity. You recall that under such circumstances the central bank(s) would add liquidity to the market to help manage the “mess”. Adding liquidity to the IR markets is tantamount to reducing interest rate⁴⁴¹. The bulk of such rate reductions (at least initially) tend to be at the short end of the curve.

There are a large number of structures that could be used to exploit this view. Here, the notion that short term rates will drop is explored. On the premise that all short term rates would drop, a structure using the listed markets is considered most suitable due to ease of access, low transactions costs, etc.

The “easiest” listed market instruments would be related EuroDollar (ED) contracts, which are indexed against LIBOR. There are also listed contracts for T-Bill futures, but these are much less liquid compared to LIBOR based contracts. On the other hand, the expectation of a rate reduction would be most closely correlated to T-Bills, since lowering of rates by The Fed would be (usually) expressed explicitly via Treasury products. LIBOR based contracts “should be” closely correlated. However, keep in mind that if the driver of the calamity is considered a “banking crisis”, then LIBOR (which is the rate at which banks lend to one another) may not track the Treasury rates exactly (e.g. there may be a premium required for LIBOR to reflect the greater risk with banks c.f. the US government that may remain highly credit worthy, and thus LIBOR may not drop “lock step” with Treasury rates⁴⁴²).

You consider that this “credit correlation” risk is low, and proceed on the assumption of a highly correlation between the Treasury/LIBOR markets.

Since the “rest of the universe” is seeing the same market conditions that you are seeing, they too have factored in some expectations of an “event”, with some impact on the forward prices, and options’ vols have become “bid” to some extent. These points are introduced as part of the reality impact. That is, your ability to then create a trade that has the mandated/operating parameters and exit conditions that try to achieve a sensible risk-adjusted return will be that much more difficult. Moreover, under such additional real

⁴⁴¹ As discussed earlier and detailed in [4], [4.a], and [8.b], while it is common to refer to this process as a “lowering” of rates, in fact the actual mechanism is via securities and related transactions (e.g. Treasuries, and “system” repo’s), and the price attained during those transactions implies a rate. In the end, as always, the entire process must be expressible in terms of “cash”. Indeed, monetary policy is precisely intended to alter the amount of cash in circulation, even if the vernacular is in terms of lowering/raising rates.

⁴⁴² This effect is sometimes traded via the TED-spread, being the Treasury-Bill-EuroDollar spread. A widening of the TED spread is often associated with “banking issues/crisis”.

world forces, the choice for structuring the trade must consider a wider range of instruments. For example, since vols have started to be “bid”, trading in naked options may prove a poor choice, even if you get the market right, since those contracts (on a naked basis) will be expensive.

For simplicity, assume that the event is expected prior to the expiration of the Dec futures, which are currently quoted 98.77 and which is the current “front” contract⁴⁴³. Suppose further that the Dec futures were quoted at 97.23 when you first started to consider this possibility, and prior to the “increased concern” regarding the housing market. This implies that the “market” has factored in an expectation of approximately a 50 bps cut (i.e. you have already lost 50 bps worth of potential profit, since the market has moved on that expectation also).

However, you know from past experience that The Fed has lowered rates down to 50 bps and even lower (e.g. 25-45 bps) in previous calamities (i.e. a more than 200 bps cut compared to the “pre jitters” level of 97.23). In addition, assume that OTM call vols have been bid with relatively greater implieds going out the skew (i.e. the more OTM, the greater the relative increase in the offer side of the call vols as provided by the vol skew values below).

Aside: Recall that standard IMM deposit futures prices are quoted on a “discount basis” = $100 - (\text{forward}) 3\text{-month LIBOR}$ (i.e. the LIBOR rate for the 3-month period starting at the futures expiration). Thus, an ED price of 98.77 implies a forward 3-month LIBOR of 1.23%. Thus, for The Fed to get rates down to, say, 50 bps (i.e. 0.50 %) in this context implies the Dec futures price would “rise” to 99.50.

15.3.2.2 A Trade Idea

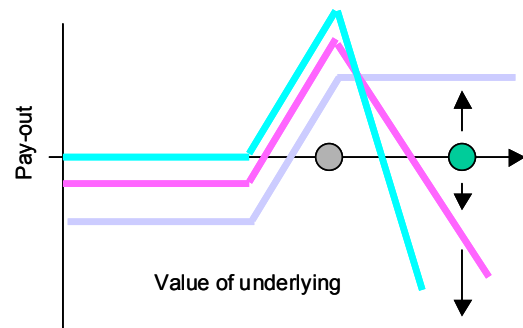
Suppose that following some analysis and a review of your mandate, it transpires that your trade must be expressed either in terms of ED futures, ED options, or some combination. Although futures avoid the considerable costs of dealing in options (especially as at the moment vols are bid), you consider a naked futures position to be too risky (i.e. while it costs “nothing” to enter into a futures based position, the cost of getting it wrong is much higher compared to an option position, with risk limited to the premium).

⁴⁴³ Some care is required with this terminology, since in some instances the “front” contract is not the one that is the closest “calendar” contract, but rather the closest one with highest volume/open interest. In ED futures, this can be the “next” contract, due to the liquidity provided by swap traders relying on ED contracts for hedging/replication. Moreover, recall that listed futures tend to be quarterly, but may have “serial options”, which expire as 1-month, and 2-month options against “front” quarterly future.

Similarly, a naked options position is considered too risky by you, in the sense that if you get it wrong, the amount premium lost would be excessive due to the current excessively high vols, and in any case the futures markets have already moved substantially, further reducing the possible size of (potential) profits.

Moreover, since you are confident that the rates will not be lowered beyond a threshold level, your analysis considers the possibility of tailoring the risk profile of the trade by a combo that buys somewhat OTM calls (that will generate the profits), but sells deep OTM calls to offset the revenue of the of the “profit generating” options. In the past, you had used call- and put-spreads in somewhat similar situations, but now you consider that as there are “hard limits” to how far rates can drop, it may be sensible to sell (relatively) many more of the deep OTM calls (compared to the number contracts of the closer calls). That generates even greater revenue with which to offset the total cost of this trade. In the standard vernacular, selling more of the higher strike option in a spread is referred to as a “ratio” call-spread, though the default use of the expression ratio call-spread refers to selling 2 of the higher strike calls for each one of the lower strike purchases. In the case of ratio put-spreads, it is selling more of the lower strike (again the deep OTM strike) option.

The “optimal” ratio of the two strikes for this trade is determined by risk/return analysis. That is, while selling an increasing amount of the deep OTM strike generates revenue for the trade, it also increases the risk profile, should the market go past that deep OTM strike. The image to the right illustrates the pay-out for a standard call-spread (blue), a (standard, i.e. 2:1) ratio call-spread (pink), and a very high ratio call-spread (aqua). The very high ratio call-spread is being shown as a “zero-cost” ratio call-spread, in that the revenue from the higher strike calls exactly offsets the premium required for the lower strike calls (for this particular combination of strikes and ratios). The “grey dot” shows the higher ratio structures produce higher profits/lower cost if the market remains below the “best case scenario” (i.e. that is where the pay-out’s peak). However, those same higher ratio structures produce substantial losses if the market goes past critical thresholds (for example if the market moved to the “green dot”, the high ratio spread will experience very great losses relative to the lower ratio spreads).



Thus the selection of the strikes and ratios is the subject of some important scenario risk/return analysis. However, in the case of listed products, the strike/ratio optimisation is, in a sense, a little more complex due to the restricted choice of strikes. Moreover, the idiosyncrasies of the listed markets may introduce additional “ambiguities”. Two such issues are:

Strike resolution: Generally, there will be only one set strikes quoted each day, usually based on a formula used by the exchange wherein they set today’s ATM strike as that nearest to, say, yesterday’s futures closing price. For example, if the