Lehman Brothers

Lehman Brothers has linked a three-year, principal-protected note to a basked of four, non-US indexes and their respective currencies. The US product is split between equity indexes and currencies, although it is debatable whether foreign index products will prove to be better with or without currency risk

Product description

This three-year principal-protected note linked to a basket of four non-US indexes and their respective currencies was issued by Lehman Brothers in the US. The product features equity exposure and currency exposure in equal measure and provides 135% participation in the overall basket. The four indexes linked to are the DJ Eurostoxx 50 (35.42% weighting), FTSE 100 (33.97%), Nikkei 225 (21.42%) and S&P/ASX 200 (9.19%). The note also provides exposure to the indexes' four currencies (sterling, the euro, the yen and the Australian dollar). For a US investment seeking foreign exposure, the DJ Eurostoxx 50, FTSE 100 and Nikkei 225 are obvious choices. The final choice of an Australian index is perhaps more unusual, but it does provide exposure to a rather neglected region.

Most structured products linked to foreign indexes have payouts that are calculated 'quanto style',

Issuer:	Lehman Brothers
Country of issue:	US
Currency of issue:	USD
Product type:	Simple growth (capital protected)

Product summary

A three-year principal-protected note linked to a basket of four non-US indexes and their respective currencies. This note features equity exposure and currency exposure in equal measure and has 135% participation in the overall basket.

Points for:	1. A three-year principal-protected note linked to four indexes and currencies 2. Product split between equity indexes and currencies
Points against:	1. Participation rate expressed rather higher than equivalent other investments of this type 2. Debatable whether foreign index products serve the investor better with or without currency risk
Asset exposure period:	3 years (full term length 3.01 years)
Final index level definition:	Basket reading on final day of the investment
Underlying asset:	Basket invested in four indexes and currencies with their weightings as shown. DJ Eurostoxx 50, FTSE 100, Nikkei 225 and S&P/ASX 200. It also has an exposure to the four currencies of these indexes (GBP, EUR, JPY and AUD)

Offer period	Opens n/a	Transfers by n/a	Closes 26/6/2007
Key dates	Strike set 26/6/2007	Final market reading 25/6/2010	Maturity/ payout 29/6/2010

as described in Trade of the month (page 42). The alternative way to calculate a payout is to use the composite value of the index, which is made up of the index value multiplied by the foreign exchange rate. This is closer to how mutual funds have to hold assets in other currencies as they cannot avoid taking currency risk indefinitely.

The equity portion of this basket will show exposures that are equivalent to the quanto calculation, i.e. simply the percentage gain or loss of the index. The currency portion of the basket gives corresponding exposure to the currency of each index. When the exposure of the equity and currency are combined in this way then the effect is (almost) the same as calculating the return composite style. In fact, the volatility of a foreign index on its own, which is what drives a quanto option, is usually only a little less than the composite volatility. Although the FX rate can have a substantial volatility of its own, it is usually negatively correlated with the index. This is because an economy generally becomes more competitive in the international arena when its currency weakens as exports look more attractive (although importing will cost more).

So why has the basket been structured in this way? There is nothing wrong in giving exposure to an index calculated composite style and arguably this splitting of the equity and currency component gives a clearer breakdown to the investor as to what exactly is involved. However, the effective gearing to the basket of the four composite indexes is half of 135% (67.5%). This is because the basket has been split across equity and currency whereas these are simply two halves of the composite return. For an investment linked to overseas assets, either quanto or composite style, the result will be the same if FX rates are unchanged. For this investment, this means that half the basket will be unchanged.

Given the short maturity of the investment and the fact that the investment is linked to four indexes and their currencies, the terms offered are reasonable enough. Whether it is totally appropriate to dress this product up as having 135% participation is debatable. Note that the US market tends to choose shorter maturities because of its more trading-based investment culture. This makes structuring principal-protected investments more difficult because the terms do not generally look so attractive. Also, it is more common in the US to take point-to-point readings rather than use averaging, as is standard practice in Europe. This also affects gearing levels. A range of mechanisms to make the product look more attractive have therefore been used, such as the one analysed here.

From a timing point of view – given the weakness of the dollar over recent years – it is unclear whether going long four currencies against the dollar represents good timing.

Pricing and risk

Eight underlyings means that estimating overall basket volatility is not easy. Although the individual assets all have liquid option markets (the weakest being the Australian index), the question of where to mark correlations between them is difficult to address. This is further complicated by the fact that the two halves of the basket are in different time zones.

We have noted that this basket is similar to a basket of composite indexes. But there is a small cross-term missing between the index and currency terms. Although the payout of a composite index is a little harder to explain than the pure percentage return of a quanto product, the hedging for the bank is rather easier. This is because trading the composite version of the index makes it the same as a domestic asset – to purchase a delta hedge the bank needs only convert US dollars into the appropriate currency and use that currency to purchase a holding in the index.

Product assessment

To see details about the scoring system, riskmap and probabilities please see the explanation of the research methodology

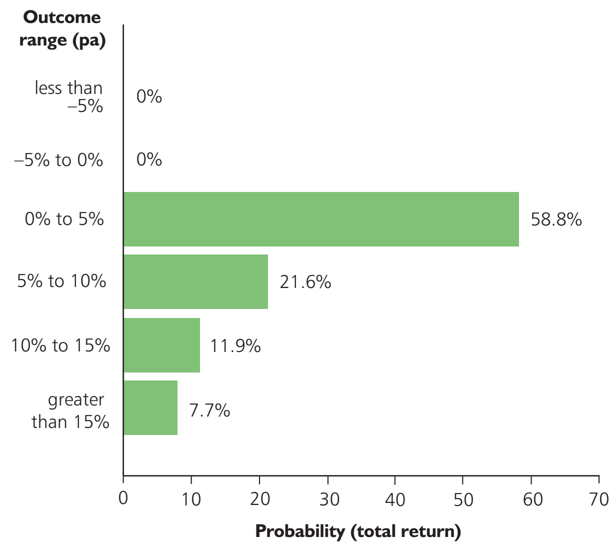
Investor rating 7.75/10
(This rating does not take into account the tax treatment of the investment)

Riskmap rating 1.23/5

To compile the overall scores this product scored as follows in our different categories:

Transparency 9/10
Value 6.94/10
Returns 6.86/10

Probability table of product return outcomes (based on simulated performances)



Similarly, when the hedge must be sold (including at maturity) the appropriate number of index units are sold and the currency immediately converted into US dollars. This demonstrates that the bank has no currency risk, which is instead borne by the investor. ■

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