



C A M B R I D G E A S S O C I A T E S L L C

EUROPEAN MARKET COMMENTARY

STRUCTURED PRODUCTS:
BUYER BEWARE

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The Structured Products Industry Is Alive and Well

Given the current state of affairs in the subprime and credit markets, the idea that any kind of “structured” instrument would find a market may strike readers as unlikely. Yet in spite of the screeching halt since last summer in the growth of structured finance instruments (collateralized debt obligations [CDOs] and collateralized loan obligations [CLOs]) and the structured investment vehicles used by financial entities (until now!) to keep these assets off of their balance sheets, the structured products industry continues to flourish.

While structured products have been around for over 20 years, they have proliferated in recent years and are now marketed to retail as well as institutional investors. As investment consultants we see them most often in the context of family clients, especially in Europe and in turbulent markets such as we are presently experiencing, when investors may be particularly interested in purchasing portfolio protection. Private banks and other broker-dealers offer structured products to investors as a way of hedging risk, diversifying a portfolio, or potentially reaping the rewards of a particular outlook on an asset class or index. Over \$186 billion of structured products were sold in Europe in 2006, more than three times as much as in the United States.

While in most cases we regard careful asset diversification as the solution to achieving principal protection over the long term, there are cases in which structured products can serve a useful purpose, particularly over relatively short or intermediate time horizons. Structured products can also allow investors to make a bet on a view different from that of the broad market. However, the principle of *caveat emptor* is especially appropriate for potential purchasers of these instruments, given their complex structures and high fees. Substantial investor due diligence is advised.

Understanding Structured Products

While there is no commonly accepted definition of “structured products,” one useful formulation (from a well-known investment bank) is “investments that generally represent the use of some form of derivative to provide a unique or nontraditional risk/return profile.”¹ Basically, structured products are derivative-based instruments aimed at addressing investor interest in newer markets or asset classes, implementing a specific view different from that of the market as a whole, enhancing yields (e.g., when the investor has a specific price target level at which it would be comfortable exiting or entering the underlying asset) through the use of a levered payout structure, or eliminating downside risk. Structured products include different financial instruments (e.g., a bond and an option) and can combine debt and equity features.

¹ We distinguish structured products from CDOs and CLOs even though insurers and fixed income funds may refer to such financial instruments as structured products. The term “structured notes” is also used by some to refer to the type of structured products that we discuss herein.

Over 70% of European structured products issued from 2005 through 2007 were linked to interest rate changes or equity performance. Other structured products were tied to commodities, currencies, and equity indices, among other things. (Table A). An equity-linked note (ELN) illustrates the basic form of a structured product. An ELN often is just a zero coupon bond plus a derivative. The bond serves to limit downside risk while the derivative provides the chance for return enhancement. Suppose the derivative is a call option on the MSCI Europe Index. The investor might buy an ELN for €110,000, €90,000 of which goes to purchase a bond with a face value of €100,000 while the remaining €20,000 is used to buy call options on the index.² At the end of the three-year term of the structured product the investor will receive the bond as well as an additional, levered return if the total return of the MSCI Europe Index is more than 20% during this time (Table B).

The provisions governing each structured product are set forth in a term sheet. While the details vary by product, key terms that investors must understand include the following:

- **Interest rate, security, index**, etc. upon which the payout will be based
- **Payout formula**, including (1) participation rate (the rate, if any, at which returns within a particular range are levered up in the payout formula), (2) how daily and final prices of the underlying asset are calculated, and (3) downside protection and return cap levels
- **Term** of the structured product
- **Cost** (initial commission, management fee, etc.)
- **Issuer Call Rights/Investor Exercise or Conversion Rights**, including any minimum bid/ask spread
- **Liquidity** (e.g., what is the issue size? will the product be listed on an exchange? is there a minimum bid/ask spread or a penalty for selling the product back to the issuer?)
- **Tax** treatment

The structured products we come across are normally ELNs, which are essentially packages of derivatives and underlying securities that together offer unique risk/return patterns. Because of their high fee structure, under normal market conditions such products usually will underperform the assets upon which their derivatives are based unless the investor's view is different from that of the market (and proves to be correct). However, the mechanics of how structured products work are complicated—much more so than those of their component elements. Therefore, whenever we analyze a structured product, we create a payout diagram, layer our standard risk/return assumptions on the underlying securities, and examine the probability that the product will outperform its component parts on an after-fee basis. We then ask: “Under what scenarios will outperformance occur?” “Do we/our clients believe such scenarios are likely?” “Is it worth the cost?” We believe potential investors should do likewise prior to purchasing any structured product.

² Note that we do not take fees into account in this example.

Benefits of Structured Products

Structured products can be used to diversify or hedge risk in an investment portfolio. Investors can also use them to implement a bet on the expected performance of the underlying asset upon which the derivative is based. Structuring enables an investor to customize a product that meets its objectives and is based on its risk/return profile. There are an infinite number of ways to structure a product: coupon rates, payout rates and formulas, risk structure, duration, and the underlying asset on which the derivative is based can all be modified to meet investor needs. A synthetic convertible bond can even be created to tie returns to the performance of a company that does not offer listed convertible securities. Not surprisingly, there is an alphabet soup of acronyms identifying particular forms of structured products.

The greatest appeal that structured products hold for investors seems to be that they normally include a guarantee of principal. The investor knows how much money it will receive at the end of the investment period (assuming no credit problems on the part of the issuer). Such downside protection is particularly attractive in times of low interest rates, high volatility, and economic uncertainty. A structured product might also include a “buffer zone” that protects the investor from loss if the underlying asset falls by 15% or less, for example.

The structured product may also offer good upside potential. An investor can purchase a structure under which returns on the asset underlying the attached derivative that fall within a specified range are levered up. For example, an investor that expects strong but not outstanding price gains in the FTSE 100 might purchase a structured product that provides it with 120% of all gains between 10% and 20% but no return on gains above 20%.

Structured products thus offer a convenient, “one-stop shop” way to accomplish portfolio objectives. Although an investor could conceivably create the same structure in its portfolio by buying a package of securities and derivatives, thereby avoiding some fees, this is not always possible. Moreover, investors often do not have the expertise or time to create and monitor such a structure.

Some Important Considerations

Costs

Structured products are expensive. Under one structure we have seen, the issue price was 110%, meaning not only that the fee was unclear but that in the event the investor received only the principal (100%) back at maturity its fee would for all intents and purposes be 9%.³ Other structured products include substantial management fees. The lack of transparency generally makes it difficult to know the actual fees issuers are receiving. However, it is safe to assume that (1) there is no free lunch and (2) the less transparent

³ In addition, as discussed below, there would have been an opportunity cost due to the fact that principal protection was on a nominal basis.

the structure, the higher the embedded fee is. Investors are also subject to significant costs if they need to sell the structured product to the issuer or a third party given the illiquidity of this market. Indeed, some term sheets contain a minimum bid-ask spread.

Common Features to Look Out For

As indicated above, structured products are complicated. Potential investors who do not deal with them as a matter of course are unlikely to be aware that they are much more costly and difficult to understand than their embedded derivatives or to fully understand how often they will outperform and how the payout will work under different economic scenarios. For example, data from one issuer seemed to show that the product, which was structured to outperform a passive alternative at the tails (thanks to a downside floor and upside leverage), would outperform 60% to 70% of the time. In fact, our calculations, which among other things remedied the issuer's failure to account for reinvestment of dividends in the passive alternative, showed that the *passive alternative* would outperform over 70% of the time (Table B).

More generally, it is unlikely, particularly once fees are taken into account, that investors will benefit from betting against the market on particular return scenarios (e.g., that a price index will fall by between 5% and 10% over a specified period). Most structured products are geared toward a range of returns within which the underlying asset might perform. The investor outperforms only in the unlikely event that performance of the underlying asset falls within this range.

One of the most important features the investor should be aware of is that the guarantee of principal may obscure the fact that it usually will receive a *price* return rather than a *total* return on the equity portion of the structured product. Since dividends normally account for a large portion of equity returns this is a significant concession on the investor's part. Moreover, because principal protection is on a *nominal* basis, structured products carry a potentially large opportunity cost. The guaranteed portion of a structured product will provide less principal protection in an environment of rising inflation.

Some structured products contain call provisions, limiting investor upside. And even if the issuer cannot buy the product back, the payout formula may limit investor upside. For example, assume that (1) the payout on a five-year structured product is based upon a principal guarantee plus a levered return (120%) if the price of the MSCI Europe Small Cap Index rises between 20% and 40% and (2) the price return of the index is 40%. In this case the payout will vary dramatically if it is path-dependent (as are some structured product payout formulas) rather than tied to just the beginning and ending values of the index (Table C). Finally, while structured products can provide diversification, investing in a diverse portfolio provides a better risk-adjusted return.

Risks

In addition to the considerations outlined above, structured products carry certain risks. Although such products ostensibly match investors' risk/return profiles, each investor must recognize that they are mass marketed to potential buyers around the world. Each product is therefore more likely to meet needs

unique to the issuer (broad customer appeal) rather than those of an individual investor. Whereas the issuer has modeled and run simulations on all possible results, the investor, even if it has run its own model, is likely to have a less complete understanding of how often and under what circumstances it is likely to come out ahead.

The investor also takes on some significant risk such as counterparty risk (e.g., the issuer's credit risk), which of course can be assumed to be higher today than in recent years. There will often be liquidity risk due to the fact that the market of potential buyers may be very limited and/or the bid-ask spread may be significant. Even when structured products are listed on an exchange, which tends to be the exception rather than the rule, they are not very liquid.⁴ Purchasers of structured products will also receive no specific protection under national investment laws.

Conclusion

Structured products are complicated and costly. Readers who are still with us may be asking "Are there ever situations in which these products make sense?" We think they may be a useful addition to a portfolio under one or both of the following circumstances. First, the investor believes that the market outcome under which the structured product will outperform has a higher probability of occurring than is reflected in the market's pricing of the underlying asset. Second, the investor has a specific need for principal protection that it cannot (or chooses not to) achieve through diversification or hedging strategies. In our experience, it is unusual for the former circumstance to be present and somewhat more likely for the investor to desire principal protection. It will still be incumbent upon the investor to deconstruct the product, make sure it meets the investor's objectives, and examine its cost structure versus that of available alternatives.

As noted above, we believe diversification is better achieved through asset allocation strategy than through complicated and costly structured products. However, structured products may also be useful for an investor unable to diversify a highly concentrated portfolio,⁵ particularly an investor that cannot or does not wish to research and buy options itself (or through a third party). There may be other situations in which structured products are appropriate, but in each case the investor should thoroughly understand the workings of any structured product it is considering adding to its portfolio.

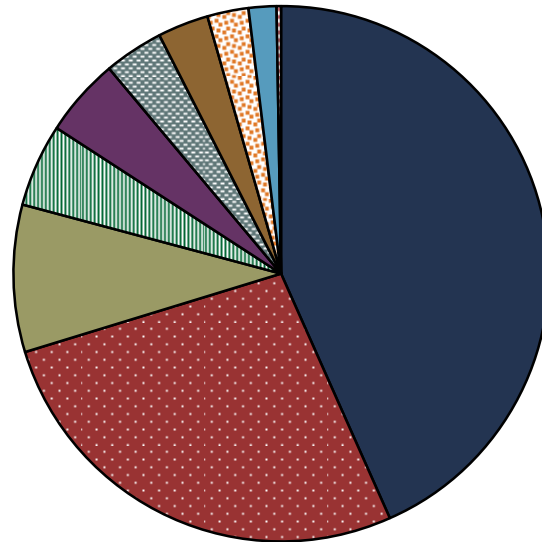
⁴ According to Merrill Lynch, "structured notes are traded in the same way as other securities and do not require an ISDA or other derivative documentation to trade." Merrill Lynch, *Structured Products Primer*, December 3, 2007.

⁵ For example, an investor may be an insider that cannot sell its shares for a certain period or the investor's sale of the shares would move the market.

Table A

EUROPEAN STRUCTURED PRODUCT SALES

2005-07



■ Interest Rate Linked	■ Equity Linked	■ Currency Linked	■ Equity Index Linked
■ Inflation Linked	■ Credit Linked	■ Fund Linked	■ Commodity Linked
■ Hybrid	■ Bond Linked		

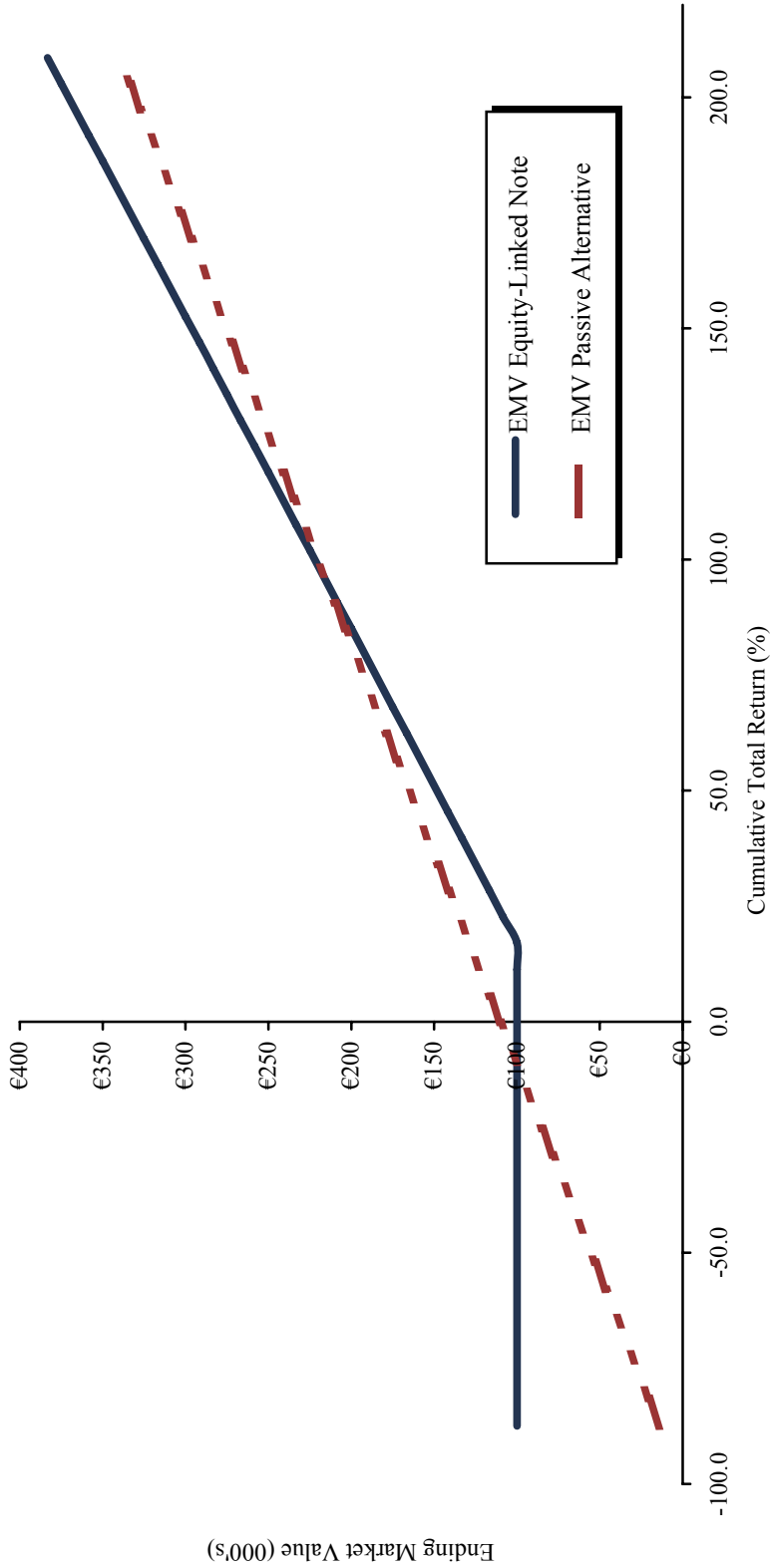
	<u>Structure Sector</u>	<u>US\$ (Millions)</u>	<u>No. MTNs</u>	<u>% (US\$ terms)</u>
1	Interest Rate Linked	\$325,219	\$13,894	43.4
2	Equity Linked	\$200,726	\$19,807	26.8
3	Currency Linked	\$66,368	\$7,927	8.9
4	Equity Index Linked	\$37,802	\$2,422	5.0
5	Inflation Linked	\$35,394	\$264	4.7
6	Credit Linked	\$26,517	\$1,079	3.5
7	Fund Linked	\$23,101	\$952	3.1
8	Commodity Linked	\$19,193	\$1,560	2.6
9	Hybrid	\$13,425	\$556	1.8
10	Bond Linked	\$1,071	\$25	0.1
	Total	\$748,816	\$48,486	100.0

Source: Bear Stearns.

Note: MTNs stands for medium-term notes.

Table B
PERFORMANCE OF EQUITY-LINKED NOTE VERSUS PASSIVE ALTERNATIVE

Ending Market Value for €110,000 Invested

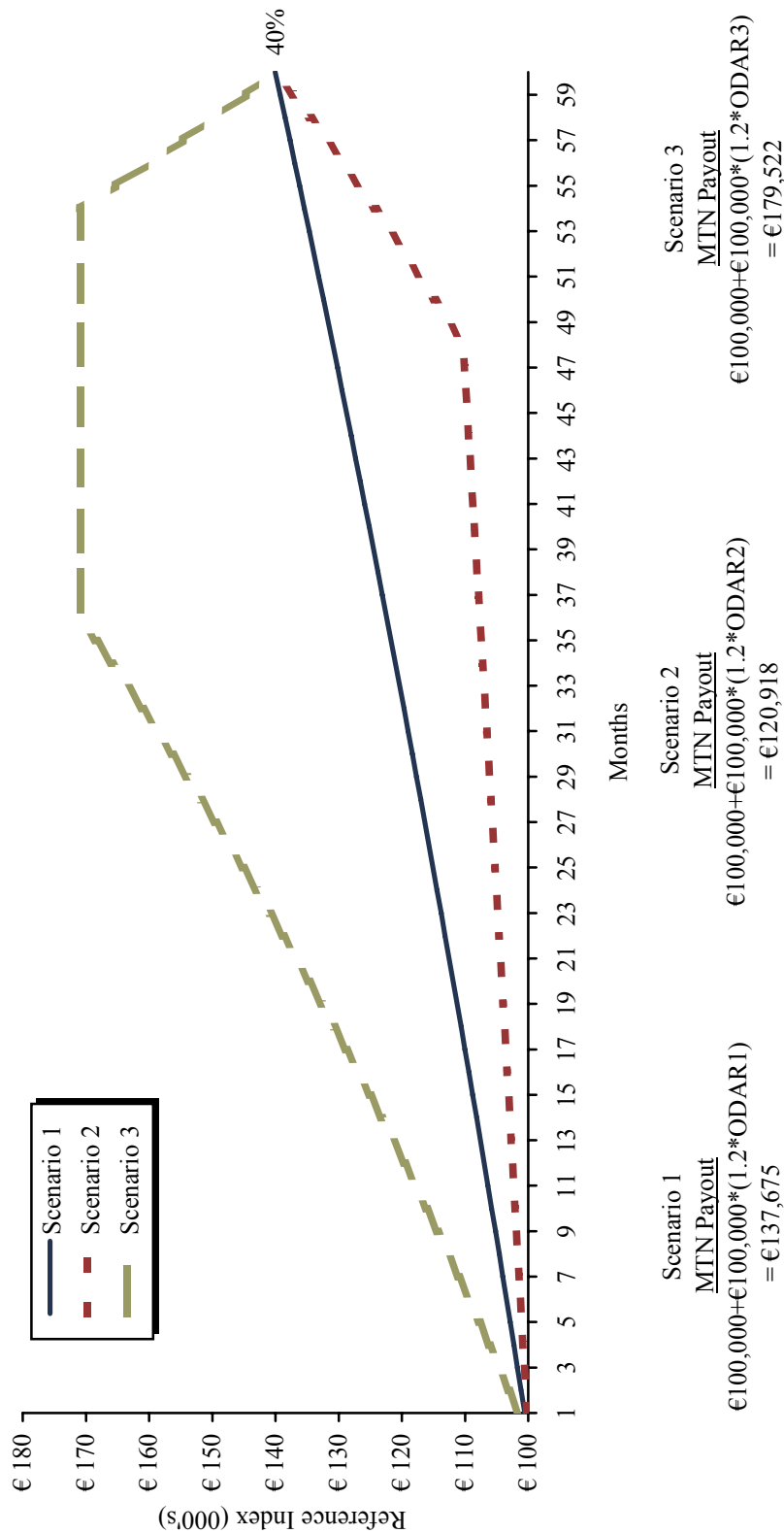


Source: Cambridge Associates calculations.

Notes: Chart assumes (1) a constant and steady growth (or decline) in the market over the period of the structured product and (2) a constant dividend rate of 2.6%, which is the difference between the MSCI Europe Index's price return and total return over the course of 2007. Returns of greater than 20% in this example are levered at 200%. An undisclosed fee is deducted from the total amount invested in the derivative but, for simplification purposes, we have excluded the fee in this example.

Table C

PAYOUTS ARE PATH-DEPENDENT RATHER THAN ENDPOINT-DEPENDENT
Comparison of Payouts in Three Scenarios Where Reference Index Appreciates by 40%



Notes: Index values rebased to 100,000. Fees are not taken into account. The principal guarantee is €100,000. The ODAR (Observation Date Average Return) is the percentage difference between (1) the arithmetic average of the closing levels of the price index on the last calendar day of each month during the last 24 months of the term of the equity-linked note, or the closest following business day, and (2) the initial level of the price index. If the reference index appreciates between 20% and 40% over the full five-year period, 20% leverage is applied to the ODAR. For example, in Scenario 2 the reference index returned 40%, so the investor receives the 20% leverage on the ODAR (17%). Therefore, the total medium-term note payout was €120,918 [$\text{€}100,000 + \text{€}100,000 * (1.2 * 0.17)$].