



STRUCTURED PRODUCT – WHAT AFFECTS THE VALUATION

Explaining to the client the expected returns on a structured product should be relatively easy. But conveying how the investment is priced during its lifetime may not be quite so simple. Whilst designed to be held to maturity, a client may need to sell their investment beforehand; or quite naturally want to look at the performance of the investment. Most structured products are now valued, and the prices are available on a daily basis. With news on markets and economies available 24 hours a day, the investor is able to be more market-aware than ever before and may need re-assurance when the price of the investment isn't always reflecting market movements. It is important to be able to respond to any questions raised regarding that valuation and the investment's performance. We know that structured products are typically made up of zero-coupon bonds to provide the capital protection element and options to provide the potential return. So, let's look at each of these in turn to see what impacts the price.

The zero-coupon bond is relatively self-explanatory. A zero-coupon bond is one bought at a price discounted to its par or face value, as a result of the buyer not receiving the periodic interest payments (coupons). When the bond reaches maturity, its value is paid back. This value needs to equate to the level of capital protection being offered. The amount of this discount will be dictated by the current interest rates, the credit rating of the bond issuer and time to maturity. In times of low interest rates, the rate of discount will be lower than when higher rates prevail. Simplistically, to achieve 100% capital return at the end of 5 years, and if the rate of discount was the equivalent of 2% per year, then the discounted price would be around 90%.

Options are a little more difficult to explain, with a number of variables affecting the price (the premium). Both call and put options are used within structured products, depending upon the style of pay-off being sought (*). The premium of any option has two main components: **Intrinsic Value and Time Value**.

Intrinsic value is basically the money that you would gain if you were able to immediately exercise the option. Intrinsic value for a call option exists when the price of the underlying on which the option has been traded is higher than the strike (initial) price. With a put option, the intrinsic value exists where the price of the underlying is less than the strike for the option.

An option which has an intrinsic value is often referred to as "in-the-money"; where there is no intrinsic value it is referred to as "out-of-the-money".

Intrinsic value Call Option = Current Price > Strike price

Intrinsic value Put Option = Strike price > Current Price

Time value is the amount an option trader is willing to pay for an option above its intrinsic value, in the hope that at some time prior to expiration, the option value will increase because of a favourable change in the price of the underlying. The longer the amount of time for market conditions to work to a trader's benefit, the greater the time value.

Time value = Option Premium – Intrinsic value

(*) A Call option gives a right not an obligation to buy at an agreed price; a Put option gives a right but not an obligation to sell at an agreed price.

So how will the markets affect the price of the option?

Changes in the underlying security price will change the value of an option. These price changes have opposite effects on calls and puts. For example, as the value of the underlying security rises, a value of the call will generally increase as the difference between the premium paid and that which could be realised by exercising the option will increase. The reverse is true for a put. And likewise, the converse will be true should the price of the underlying fall.

 enquiries@idad.com

 [01730 776757](tel:01730776757)

 www.idad.com



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Time until expiration, as noted above, affects the time value component of an option's premium. Generally, as expiration approaches, the levels of an option's time value, for both put and call options, decreases or "erodes."

The effect of an **underlying security's dividends** and current **interest rates** has a small but measurable effect on option premiums. In essence, the values of any interest or dividends that may have been achieved from alternative investments, for example a Government Bond, are taken into account.

The effect of **future volatility** is the most subjective and perhaps the most difficult factor to quantify, but it can have a significant impact on the time value portion of an option's premium. Volatility is a measure of variability in the price of the option's underlying security. Where there is an expectation that volatility will increase in the future, it generally results in higher option premiums for puts and calls alike. It should be noted that it is not historic volatility that is key here, but implied volatility. Implied volatility is based on financial and market analysts' perception of how the markets will react in the future, extrapolated from the quantifiable historic data and their understanding and interpretation of markets forces.

Further, there is the **market sentiment** which is an unknown element as it is totally subjective where views and opinion can differ from one investment house to another.

It is easy to see that all these factors can and do change throughout the fixed term of the investment. The change in intrinsic and time values will determine the option price on any one day. Large movements in underlying prices (i.e. volatile markets) can have a very significant effect. This is more dramatic where the level of protection is relatively low and conditional, for example barrier structures or "soft" protection. With a lower level of bond investment required, exposure to the options is increased and the impact of changes in the option value on the overall structured product price will be compounded as a result.

So what does all that mean in terms of pricing an investment before it reaches its maturity date? Let's recap.

The price for a structured product in the secondary market is determined by the value of the bond and the options used to build the investment. The bond price is relatively stable, designed as it is to have a specific value at maturity. Options are priced on a real-time basis and so reflect the market movements and sentiment on the underlying investments throughout the day. If the markets go up, it may seem reasonable to expect the option price to move the same way. However, if for example the option is "out-of-the-money", it will have no intrinsic value – and if at the same time, maturity is approaching; the fall in time value would serve to compound the effect.

In addition, if the investment is structured with a capital protection barrier, the lower the barrier the higher the exposure to the option element. In these circumstances, the overall value of the investment could be well below par. Of course, the opposite could be true and there will be times where the impact of the markets will give rise to the situation where a profit can be taken, releasing the cash to re-invest.

To finish, just as company share prices may not reflect the true asset value of the organisation, an option will not necessarily reflect its underlying exactly. In pricing options (and stocks) there are identifiable elements to take into account, as well as values based on future expectations.