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## **INVESTING WITH OPTIONS**

### **INTRODUCTION**

Options have been developed on a variety of investment vehicles. The effectiveness of options in hedging for risk management and in enhancing return has led to their broad acceptance by investors. They have proven successful in a wide range of investment environments over the past decade. Option products are available in many markets including those for fixed income, equities, commodities and currencies. They are traded on the exchange and over the counter. In this paper, we will review basic options concepts and instruments, and examine some specific strategies being used by to reduce risk and enhance portfolio returns in Fixed Income portfolios.

#### **Definition**

An option establishes a right for the owner to buy or sell an underlying security at a specific price at any time during the life of the option. This right is sold by the option writer to the option buyer for a premium.

### **OPTION ELEMENTS**

#### **Strike Price**

The strike price is the price at which the underlying security may be bought or sold when the option is exercised. For example, an option with a strike price of 92 would give the option buyer the right to buy or sell (depending on the type of option held) an underlying security at 92. The strike price is established by the exchanges at or around the current price of the underlying security. New strike prices are introduced when the price of the underlying security changes significantly.

#### **Expiration Date**

The expiration date of an option is the last day on which an option can be exercised. Listed options on futures are referred to by the underlying futures contract month. For example, a September bond option is an option on September bond futures. This option expires on a specific date during the preceding month.

#### **Premium**

The premium is the price the buyer pays in return for the rights conveyed in the option. In return for the premium the option seller agrees to fulfill the terms of the agreement. The seller keeps the

premium whether or not the option is exercised. Option premiums are sensitive to changes in the underlying security price, volatility and time to expiration.

The sensitivity of premium measurements are known as delta, gamma, vega and theta.

Delta is the change in the premium given a unit change in the price of the underlying security.

Gamma is the change in delta given the unit change in the underlying security price.

Vega is the change in the premium given a one percent change in the implied volatility. For example, if an option has a current implied volatility of 10% and a Vega of 0.1, then if volatility increases to 11% the premium will increase by 0.1 points.

Theta is the decline in premium price given a one day passage of time.

These terms are expressed mathematically in the Appendix.

## **OPTION TYPES**

### Call Option

A call option gives the buyer the right (not the obligation) to purchase a particular underlying security at a specific price any time prior to expiration. For example, a September 92 call on T-bond futures conveys the right to buy the September T-bond futures at a strike price of 92 any time before expiration.

### Put Option

A put option gives the buyer the right to sell a particular security at a specific price before expiration. For example, a September 92 put on T-bond futures gives the holder the right to sell the September T-bond futures contract at 92, any time prior to the expiration date. This is an inexpensive and efficient way to establish a short position. The strike, expiration and premium elements are common to both option types.

## **ADVANTAGES**

### Safety

The most important advantage of options is their safety. Options are regulated by both the Securities and Exchange Commission and the Commodities Futures Trading Commission. Listed options are exchange traded and guaranteed against failure by the exchange.

## Liquidity

Another advantage is liquidity. The daily volume of options on Treasury Bonds traded on the exchange is two and one half times that of the volume of bonds traded in the cash market.

## Efficiency

A third advantage is efficiency. Transaction costs especially on listed options, are very low, amounting to about one quarter of the transaction cost of bonds traded in the cash market.

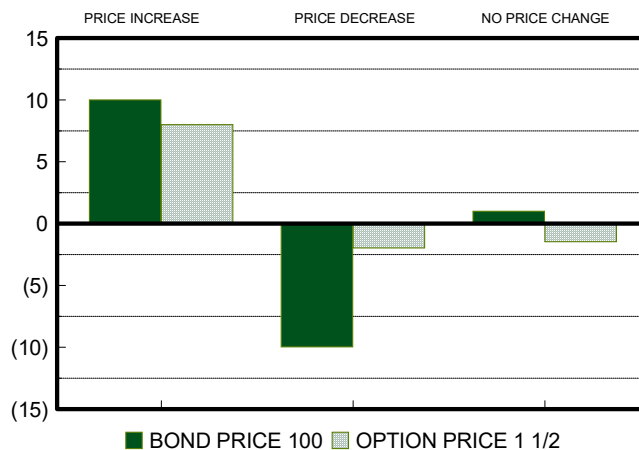
## **STRATEGIES**

Options are valuable to a portfolio manager because they greatly increase his flexibility, and his ability to respond to different market conditions. Prior to the introduction of options, a manager could only trade securities at prevailing market prices. The cost of these transactions was high and, therefore, negatively impacted performance. Options, however, created the ability to purchase and sell securities at prices different from today's, and at forward dates, with low transaction costs. In the following paragraphs we introduce some strategies employing options.

### Buying Calls To Lengthen Duration

Calls, which have the duration of the underlying instrument, are bought to increase portfolio duration in a risk averse manner. The portfolio profits point-for-point in a rising market with the underlying security once the security's price exceeds the strike price plus the premium paid. On the other hand, if the security declines, losses stop at the premium paid. The manager has controlled his risk by limiting it to the price paid while allowing the portfolio to perform to virtually the full extent of its upside potential. The asymmetric risk reward pattern of a purchased call is diagrammed below.

### **OPTIONS ASYMMETRIC RISK BUY BOND OR BUY CALL**



## Covered Call Writing

A portfolio manager can elect to sell his securities at a price higher than today's, through the sale of a call option. The manager can select that price through his choice of exercise price. The premium he receives is his regardless of whether or not the purchaser exercises the call. When added to today's price, the premium guarantees a higher sale price than prevails today. If the security were to decline from today's price, the premium received would mitigate the loss acting as a small hedge to the current position. However, it should be remembered that in the case of a rising market this strategy will cap the possible appreciation of the underlying security to the price plus the premium. Hence, in bull markets the program limits the upside potential of the portfolio. Nevertheless, this transaction is low cost and easily accomplished in the very liquid options market. Since the premium is typically a fraction of the underlying security's price, the cost associated with a call sale is much less than would be the cost of a sale of the underlying security.

## CONCLUSION

The strategies outlined in this paper are only a few of the many ways we use options to limit risk and enhance return. A great range of market outlooks can be hedged with strategies employing options. These flexible, highly liquid, low investment cost vehicles permit us to achieve the highest level of return on our portfolios for any given level of risk. Today's highly volatile interest rate environment challenges institutional money managers to respond quickly to changing risks and opportunities. The liquidity of the options market together with the unique asymmetric risk characteristics of options provides us with the means to meet challenges and capitalize on opportunities in the markets.

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