THE ADVENT OF THE STOCK INDEX OPTIONS MARKET

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The stock index options market is scheduled to be opened in Korea on July 7, 1997. An option is a choice. When buying a car we can add more equipment to the automobile that is "optional at extra cost." Options in financial markets are a very specific type of option—an option created through a financial contract. Initially, options were created by individualized contracts between two parties. However, until recently, there was no organized exchange for trading options. The development of options exchanges stimulated greater interest and more active trading of options. In many respects, the recent history of option trading can be regarded as an option revolution.

Basic Options Explained

An option is an agreement between a buyer and a seller that gives the buyer the right, through the exercise, to require the seller to perform certain specified obligations. For example, an option on a piece of property gives the buyer the right, but not the obligation, to purchase the property during a stated period of time at a stipulated price. If the buyer decides to exercise the option to purchase, the seller is obligated to turn over the property at the agreed-upon price. An option which is left unexercised expires and becomes worthless after a stated period of time. The price of an option is called its "premium." The premium is the means by which the buyer compensates the seller for the willingness to grant the option. The price at which the option can be exercised is referred to as the "strike price." The last day on which an option can be exercised or offset is known as its "expiration date."

An option is exercised at the sole discretion of its holder, the buyer, who will tend to do so only when it is in his interest to do so. For example, it would be foolish to exercise an option to purchase a car for $10,000 if the market value of the car fell to $8,000. On the other hand, it would probably be to the holder's advantage to exercise the right to acquire the car for $10,000 if the car increased in value to $13,000.

There are two kinds of options, call options and put options. A call option contract gives the owner the right to buy an underlying asset at a fixed price by a certain date. A put option contract gives the owner the right to sell an underlying asset at a fixed price by a certain date.

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The Main Economic Function of Options

1) Economic Setting

Option transactions appear to be zero-sum games if transaction costs and other costs are neglected. Why should zero-sum games be economically beneficial? As a matter of fact, options are at best monetary zero-sum games with respect to the involved cash flows. But the economic nature of options cannot be understood by an isolated analysis of the resulting cash flows stemming from option transactions. If, instead, options are analyzed in an economic setting where, for example, risk allocation and

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imperfect information are relevant structural characteristics of the financial system and the economy, options turn out to have strong welfare effects. As such option transactions are not zero-sum games in allocative terms.

2) Risk Sharing

Options provide a more efficient allocation of economic risks. An exporter can hedge his receipts in foreign currency put options. If unrestricted trading in options is permitted (with respect to underlying assets, strategy, short selling, lending and borrowing, etc.), it will enable a Pareto efficient allocation of economic risk. Options are therefore a welfare-increasing financial instrument. Options are regarded as redundant assets. Standard option-pricing theory is based on the assumption that options can be replicated by dynamic trading in the primary securities. As a consequence the price of the option can be expressed as an explicit function of the observed prices of the underlying securities. However, perfect replication of payoffs requires a complete market. Obviously, though, there is a problem: either options complete the market (i.e., add new payoff structures which cannot be replicated by existing assets), or they can be priced by arbitrage (because their payoffs can be replicated by portfolios of existing assets), but not both. A solution to this puzzle comes from the fact that the replication of options requires a dynamic strategy in the underlying assets. Therefore, the use of options is a substitute for the implementation of a dynamic strategy.

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3) Implementation of Strategies

One of the most attractive features of options lies in their non-linear payoff structure. In that way they enable a static strategy to achieve the same payoffs as dynamic strategies relying on stocks and bonds. From an economic standpoint, options represent dynamically adjusted positions in the underlying asset and cash. The dynamic adjustment is necessary because options exhibit non-linear payoffs with respect to the price of underlying asset. Especially, dynamic portfolio insurance strategies (i.e., the replication of a put-option-protected stock portfolio) were very popular in the 1980s.

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Options are also widely used in tactical asset allocation. For example, an institutional investor is willing to liquidate a position of IBM stocks within the next three months, provided that the stock price goes up at least 10%. The first strategy is to do nothing and see whether the stock price increases. However, he can also write call options on the stocks with an exercise price equal to his reservation price. In this case, he also earns the option premium. Therefore the call strategy represents a conditional sale of a cash position. The economic advantage of using calls and puts in tactical (and strategic) asset allocation is the information which is revealed by these transactions.

4) Information Gathering

It is the economic contribution of options to reveal new information which is otherwise not available in the cash market—for example, information about the volatility expected by the individuals. The reason for this is that investors reveal strategic information by selling (buying) options: A "portfolio insurer" signals his willingness to liquidate stocks conditional on a stock price decrease. A "covered call writer" signals his willingness to liquidate stocks conditional on a stock price increase. Therefore, the supply and demand for puts and calls of various exercise prices facilitate the aggregation of information about the willingness of investors to buy and sell securities conditional on the price movement in the underlying cash market. This information is reflected in the options prices for the various exercise prices and maturities if the exchange has a transparent disclo-

sure policy. It is now important to notice that this information is not available in the cash market if investors instead follow dynamic trading strategies; the mere intention to buy and sell securities conditional on the stock market evolution cannot be observed by the market participants. However, using call and put option contracts makes this information available to all market participants. Based on this information, speculators either buy options (if they think that options are underpriced) or sell options (if they think that options are overpriced).

Tips for Beginners

Professional traders in the U.S. used to advise beginners as follows: First, "trade small, until you learn what you are doing. Everyone overtrades at the beginning." Second, "learn how to use all the methods that are out there to trade. Every successful trader knows how to use all the instruments. Follow methods of people who have been successful." Finally, "Learn how to limit your risk. If you can stay in the game long enough, you will learn how to become successful."

Conclusion

Option traders often trade options with other options and with other assets, particularly stocks and bonds. Users can make the payoffs from combining different options and from combining options with the underlying stock. Many of these combinations have colorful names such as spreads, straddles, and strangles. Beyond the terminology, these combinations interest us because they offer special profit and loss characteristics.

Many traders on Wall Street first began using options to get "delta neutral" on their futures positions, allowing them to sleep well at night. Since they began using options in conjunction with futures trading, they believe they have found a way to accelerate their profits while decreasing their risk. "Delta," by definition, is the rate of change in the price of an option relative to the rate of change in the price of the future. It is how fast an option will change, relative to the speed of the futures. "Delta neutral" means, whether the market goes up or down, they are in a position to make money. For example, a trader is short (sell) S&P 500 futures and long (buy) two S&P 500 futures

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〈Table 1〉 The Top 10 Stock Indices Option Contracts in the World

Rank	Contract	Exchange	End-Dec Open Interest	Jan-Dec 1995 Volume
1	S&P 100 Option	CBOE	617,825	69,633,460
2	S&P 500 Option	CBOE	1,352,837	26,726,023
3	DAX Option	DTB	691,234	24,299,078
4	IBEX 35 Option	MEFFRV	216,855	8,179,599
5	OMX Stock Index Option	OM	76,532	6,067,268
6	Swiss Market Index Option	SOFFEX	515,297	6,027,308
7	S&P 500 Futures Option	CME	242,607	5,783,089
8	Nikkei 225 Option	OSAKA	76,516	5,174,570
9	FTSE 100 Index Option	LIFFE	289,894	4,434,086
10	EOE Index Option	EOE	285,429	3,681,781

Data Source: *Futures and Options World*, Feb. 1996