A Modern Approach to the Nature and Trading Mechanism of Forward and Futures Contracts

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Abstract: Forward and futures contracts have been designed to provide protection for participants in financial markets against adverse movements in the prices of the underlying assets. These contracts allow producers and commercial operators to fix the price of commodities wherein they trade in advance of making or taking physical delivery. The paper accentuates that forward and futures contracts have pedantically changed the face of finance by creating new ways to understand, measure and manage various kinds of risk. Hence these contracts are considered an integral part of any firm's risk management strategy in order to ensure that value enhancing investment opportunities are properly pursued. The paper also canvasses several scathing criticisms of forward and futures contracts which tend to ratiocinate that these contracts are a flagrant cause of destabilization, volatility, and oscillation in financial markets. It is globally observed that hardly one or two per cent of traded contracts are settled by actual delivery of the underlying assets, whereas the rest of the contracts are merely used to promote speculative activities in the markets.

Keywords: *Financial derivatives, forward contracts, futures contracts*

1. Introduction

The growth and extensive use of financial derivatives in conventional finance are a cogent testimony to the numerous benefits that business organizations procure from their utilization (Bacha 1999, p. 9). Theoretically, derivatives instruments are supposed to distribute risk among market participants in accordance with their ability to assume them. If such distribution is achieved, each party would be better off. Derivatives are therefore the main instruments to hedge against various types of risk but, on the other hand, they are widely used for speculative purposes as well. Speculation in contrast to hedging, involves creating positions deliberately in order to profit from exchange rate and/or interest rate movements. Speculators believe that markets' forecasts as reflected in forward rates and the term structure of interest rates are off the mark. Hence they hope to profit by taking open positions at these prices.

Bhalla (2007) is of the opinion that the past decade has witnessed an explosive growth in the use of financial derivatives by a wide range of corporate and financial institutions. This growth has run in parallel with the increasing direct reliance of companies on the capital markets as the major source of long-term funding. In this respect, derivatives have a vital role to play in enhancing shareholder value by ensuring access to the cheapest source of funds. Gupta (2006) holds that financial derivatives have changed the face of finance by creating new ways to understand, measure and manage risks. Ultimately, financial derivatives should be considered a part of any firm's risk management strategy to ensure that value enhancing investment opportunities are pursued. Hull (2007) takes the view that one of the exciting developments in finance over the last 25 years has been the growth of derivatives

markets. In many situations, both hedgers and speculators find it more attractive to trade a derivative in an asset than to trade in the asset itself. Saunders and Cornett (2007) argue that contingent credit risk is likely to be present when financial institutions expand their positions in forward and futures contracts. This risk relates to the fact that the counterparty to one of these contracts may default on payment obligations. This type of default risk is much more serious for forward contracts than for futures contracts. This is so because forward contracts are non-standard contracts entered into bilaterally by negotiating parties, and all cash flows are required to be paid at one time (on the maturity of the contracts). But if a counterparty were to default on a futures contract, the exchange assumes the defaulting party's position and payment obligation. Thus unless a systematic financial market collapse threatens the exchange itself, futures are essentially default risk-free.

The discourse that follows is divided up into eight broad sections altogether. Section 2 discusses the meaning of financial derivatives. Section 3 deals with various types of derivatives instruments. Section 4 examines the operations of derivatives markets. Section 5 describes different types of traders, namely hedgers, speculators and arbitrageurs. Section 6 and Section 7 emphasize a number of advantages as well as critiques of financial derivatives respectively. Section 8 goes through the regulatory policies on derivatives. Finally, Section 9 recapitulates the discussion and draws inferences therefrom.

2. Meaning of Financial Derivatives

Derivatives are financial instruments whose prices are dependent upon or derived from one or more underlying financial assets (Gurusamy 2004, p. 566; Hull 2007, p. 1). Derivatives have no intrinsic value rather their value is determined by fluctuations in the prices of underlying assets. Gupta (2006) states that the underlying assets or instruments can be equity shares, stocks, bonds, debentures, treasury bills, foreign currencies or different market indices such as stock market index, consumer price index, etc. For example, a stock option's value depends upon the value of a stock on which the option is written. Similarly, the value of a treasury bill of futures contracts or foreign currency forward contract depends upon the price or value of treasury bill or foreign currency. In addition to the foregoing underlying variables, some other underlying variables are also getting popular in the financial derivatives markets such as creditworthiness, weather, insurance, electricity, etc. In fact, there is no limit to the innovations in the field of derivatives. The price of derivatives instruments is not arbitrary. Instead, it is linked to the price of underlying asset that automatically affects the price of financial derivatives. These instruments have been designed to provide protection for participants in financial markets against adverse movements in the prices of the underlying assets (Kevin 2007, p. 233). Hence the transactions being carried out in the derivatives markets are used to offset the risk of price changes in the respective assets. The efficient allocation of risk in the economy is a significant function of derivatives (Gurusamy 2004, p. 566). It is quite pertinent to spell out that derivatives do not eliminate risk. They indeed facilitate to transfer risk from those who want to avoid it to those who are willing to accept the same (Gupta 2006, p. 3).

In the 1980's, financial derivatives, *inter alia*, were also known as off-balance sheet instruments because no asset or liability underlying the contract was put on the balance sheet. Since the value of such derivatives depends upon the movement of market prices of the underlying assets they were treated as contingent assets or liabilities, and such transactions were not recorded on the balance sheet. It is, however, a matter of considerable debate whether off-balance sheet instruments should be included in the ambit of financial derivatives or not (Gupta 2006, p. 5).

3. Types of Derivatives Instruments

A number of intricate types of financial derivatives are being extensively used all over the world. However, the paper dilates on forward and futures contracts which are available to investors and traders in different financial markets.

3.1. Forward Contracts

Gupta (2006) describes that a forward contract is a simple customized form of derivatives instruments. It is a contractual obligation between a buyer and a seller at time 0 to buy or sell a specified quantity of an asset, which can be of any kind, at a certain future date for a certain price (Hull 2007, p. 3; Saunders & Cornett 2007, p. 296). The price of a forward contract remains fixed over the life of the contract. It is noteworthy that a forward contract is for forward delivery only; it is not a contract for immediate or spot or cash delivery. The spot price of the underlying asset when the contract expires is called future spot price. Since it is uncertain at the time of the contract market participants take a position in forward contracts. Hull (2007) states

that one of the two parties to a forward contract agrees to buy the underlying asset and is said to have a long position. The other party that agrees to sell the same underlying asset is said to have a short position. The seller is obliged to deliver the asset, and the buyer is also obliged to buy the asset.

The price specified in a forward contract is called delivery price, and the time specified is called delivery date or expiration date. Forward contracts do not require an upfront payment. Hence no money is exchanged between the counterparties until delivery. Unlike futures, forward contracts are not traded on an exchange. Instead, they are traded in over-the-counter (OTC) market, usually between two financial institutions or between a financial institution and one of its clients (Hull 2005, p. 38). Thus the buyer and the seller involved in a forward contract deal and negotiate directly with each other in order to set the terms of the contract.

Let us consider the following simple example of hedging using a forward contract. A farmer who cultivates wheat would like to sell his wheat, when it is ready, in the market at the highest possible price. During the harvest, the market can be fraught with wheat due to good produce, and this oversupply might dampen down the price of wheat. Under the circumstances the farmer would be compelled to sell his wheat at the market price which is less than his expectations. Now he wants to hedge against the risk of loss in order that he can enjoy a reasonable profit. This risk can be avoided by making a forward contract for sale of wheat at a high price. He, for example, believes that the price of a sack of wheat should be £10. During the harvest, the price goes down to £9 per sack on account of oversupply. As a result, he will have to incur a loss of £1 per sack in the spot market. In order to ward off this loss, he can conclude

a forward contract to sell a sack of wheat for £10 when it is ready for delivery. If he finalizes such a deal the counterparty would be obliged to buy wheat from the farmer for £10 at the predetermined time. So, the farmer will ensure a good price for his wheat, and mitigate the risk of potential loss owing to the fluctuation in the market price of wheat.

Wheat processing companies such as a bread manufacturer or a flour mill need large quantities of wheat throughout the year. Sometimes these companies are, due to fluctuation in the market price of wheat, forced to buy wheat at high price if they operate in the spot market. It leads to an increase in the cost of production and a reduction in the profit margin. In other words, these companies also face risk, i.e. possibility of reduction in their profit. These companies face uncertainty regarding the future price of wheat. So, they want to procure a steady supply of wheat at a reasonable and certain price throughout the year. This objective can also be achieved by entering into a forward contract to buy wheat at a predetermined price. By concluding varied forward contracts maturing at different periods, a regular supply of wheat at a fixed price can be ensured.

Forward contracts can be used for speculation as well. Hull (2005) gives an example that an investor who believes that the British pound will increase in value against the USA dollar can speculate by taking a long position on pound sterling in a forward contract. Similarly, an investor who feels that the pound will fall in value can speculate by taking a short position on it in a forward contract. Suppose that a 90-day forward exchange rate of the British pound is $1.8381 while its actual spot exchange rate in 90 days proves to be $1.8600. An investor who has a long position in a 90-day

forward contract would be able to purchase pound sterling at a rate of $1.8381 when they are worth $1.8600. Hence he will realize a gain of $0.0219 per pound. Similarly, an investor with a short position in a 90-day forward contract will have to incur a loss of $0.0219 per pound.

3.1.1. Forward Rate Agreements

A Forward Rate Agreement (FRA) is an over-the-counter agreement between two parties in which one party (the seller of the FRA) agrees to lend a specified amount of money for a specified period to the other party (the buyer of the FRA) in a specific currency at a fixed interest rate (Apte 2007, pp 449-450). In practice, actual lending or borrowing of the underlying principal does not take place; only interest rate is locked in. An FRA removes all uncertainty from cost of borrowing or rate of return on investment. Say that for a three-month FRA written today with a notional value of £1 million and a contract rate of 5.70 per cent, the buyer of the FRA agrees to pay 5.70 per cent (the current three-month LIBOR rate) to borrow £1 million for three months. The seller of the FRA agrees to lend £1 million to the buyer at 5.70 per cent for three months. If interest rates rise in the next three months, the FRA buyer would benefit from this agreement. He can borrow £1 million at the rate of 5.70 per cent rather than the higher market rate (Saunders & Cornett 2007, p. 297).[1]

[1] For details, see Hull 2005, p. 40; Hull 2007, pp 87-88; Gurusamy 2004, pp 572-573; Smullen & Hand 2005, p. 168; Gupta 2006, pp 67-68

3.1.2. Foreign Currency Forwards

Gupta (2006) points out that a foreign currency forward is an agreement between two parties to exchange some amount of one currency for another at a specified time in the future. The exchange rate is fixed at the time the contract is entered into. The market in which such forward transactions in foreign currencies are carried out is called forward exchange market.

The cash flow in the foreign currency forwards takes place at the time of maturity, that is to say when the foreign currencies are to be delivered. More than 90 per cent of the forward contracts are settled by the delivery of currencies (Gupta 2006, p. 301).[2]

3.1.3. Disadvantages of Forward Contracts

Kevin (2007) points out that forward contracts have the following two major disadvantages:

1) This kind of contract involves credit risk or default risk. It means that there is a likelihood that one of the counterparties to the contract may default and fail to fulfill its contractual obligations. Even the forward price of an asset is merely an estimate of the expected spot price at the time of delivery. In case of *force majeure*, adverse changes occur in the future movements of spot prices. Consequently the realized or actual spot price at the time of delivery of the asset may differ from the forward price already predetermined by the

[2] See Kevin 2007, pp 237-238; Hull 2007, pp 112 ff.; Saunders & Cornett 2007, pp 234 ff.

counterparties. If the actual spot price is higher than the forward price, the counterparty taking delivery of the asset (buyer) will be in an advantageous position because he will get the asset at a cheaper price than the market price. However, the other party (seller) will have to incur a loss because he has to deliver the asset at a price which is certainly lower than the market price. On the other hand, if the spot price is lower than the forward price the buyer would be at a disadvantage, and the seller will get profit. In this case, the buyer might default and turn down to fulfill the terms of the contract. The more the gap between the spot price prevailing at the time of delivery and the forward price, the more the incentive to default. Since a forward contract is a private deal between two parties, there is *ipso facto* no mechanism to prevent default by either party. An importer, for example, finalizes a deal of forward contract to purchase £100 000 after three months at a rate of $1.44570. If, at the settlement date, the spot exchange rate is $1.46570 per pound sterling the importer will be in an advantageous position because he is getting the pound at a rate of $1.44570 when the exchange rate in the spot market is higher. However, the foreign exchange dealer who is obliged to sell the British pound to the importer at a lower rate may default. On the contrary, if the spot rate of exchange turns out to be $1.42570 the importer will have an incentive to default because he can purchase £100 000 in the spot market at a cheaper rate.

2) The second disadvantage of forward contracts is illiquidity. A forward contract cannot be cancelled except with the consent of both the counterparties. The obligations of a counterparty under the contract cannot be transferred to a third party as well. Thus a forward contract has no liquidity and marketability. It is

normally settled at maturity by the counterparties through fulfillment of mutual obligations.

Although forward contracts are useful in order to hedge against the risk of parties trading with one another, their inherent disadvantages limit the scope of their usage in many markets. Anyhow, they are being used extensively in foreign exchange markets all over the world to mitigate foreign exchange risk exposure (Kevin 2007, p. 240).

3.2. Futures Contracts

Saunders and Cornett (2007) and Hull (2007) define that a futures contract, like a forward contract, is an agreement between a buyer and a seller at time 0 to deliver a specified asset at a certain time in the future for a certain price. For a successful futures market, the supply of and demand for the underlying commodity must be large, prices must be volatile, the commodity being traded must be quantifiable to allow standardization, and the market must be competitive. Futures contracts constitute an important instrument for managing or hedging against risk in financial markets due to price fluctuations. These contracts are now actively traded all over the world. Futures contracts are normally traded on an organized exchange (Saunders & Cornett 2007, p. 297). The exchange sets up certain standardized features of the contract. As the counterparties do not necessarily know each other the exchange provides a mechanism that gives a guarantee to both parties that the contract would be honoured. Two largest futures exchanges in the United States of America are the Chicago Board of Trade (CBOT) and the Chicago Mercantile Exchange (CME). The largest exchanges in Europe are the London International Financial Futures and

Options Exchange (LIFFE) and Eurex. Other large exchanges include the Tokyo International Financial Futures Exchange (TIFFE), the Singapore International Monetary Exchange (SIMEX) and the Sydney Futures Exchange (SFE).[3]

The essential nature of a futures contract is the same as that of a forward contract. However, the features and modalities of both contracts are so distinct that forward and futures contracts have become two different types of instruments used for risk management. In fact, futures contracts have been designed to remove the disadvantages and shortcomings of forward contracts. Kevin (2007) states that the first disadvantage of forward contracts, namely default risk is removed by the margin system and the clearing-house acting as the counterparty in each transaction while the second disadvantage of illiquidity is removed by trading on organized exchanges with the facility for cash settlement. Generically, financial futures are not different from commodity futures except the underlying assets of them differ from each other. For example, a particular commodity like metals, vegetables and so on are traded in commodity futures whereas in financial futures, diverse financial instruments like equity shares, debentures, bonds, treasury securities, currencies, etc are traded.

Hull (2007) asserts that many participants in futures markets are hedgers. They want to use futures contracts in order to reduce a particular risk which they face. This risk might relate to the price of a certain commodity, the level of the stock market, foreign exchange rate or some other variable. A perfect hedge is the one that could completely eliminate the risk. Although hedgers make every endeavour to have a perfect hedge, it is few and far between.

[3] For more details, see Hull 2007, p. 6

Let us consider the following example of hedging using a futures contract. An investor holding a portfolio of securities may be anxious that the prices of shares might go down. He therefore faces a risk of reduction in the value of his portfolio on account of adverse movements in share prices. He can effectively hedge against this risk by taking a position in the stock index futures which will provide him with a gain on the occasion of a fall in share prices. For instance, the investor holds a portfolio of shares having a value of Rs.100 000. The National Stock Exchange (NSE) index Nifty on which futures contracts are traded now stands at 2 000. The investor needs to take a short position (seller) so that he can sell Nifty futures contracts in order to hedge against the risk of falling prices. The monetary value assigned to Nifty futures is Rs.1 per index point and the value of one Nifty futures, in this case, would be Rs.2 000. As the value of the investor's portfolio is Rs.100 000 he needs to sell 50 Nifty futures to hedge against the risk. We posit that the investor sells 50 Nifty futures for Rs.2 000 per contract. If there is a decline in equity prices in the stock market there would be a reduction in the value of his portfolio, and also a decline in the value of the stock market index. Say there has been a general fall in share prices to the extent of 10 per cent over a period of one month. This means that the value of the investor's portfolio has declined by Rs.10 000, and the stock index is at Rs.1 800 by the end of the month. Now the investor can close out his position in the index futures by buying 50 Nifty futures at the current price of Rs.1 800. This transaction would be equal to Rs.90 000. The selling price will be higher than the buying price viz. Rs.200 per contract. So, he will receive Rs.10 000 (Rs.200 × 50 contracts) on buying 50 Nifty futures. This gain from the index futures trading would make good the reduction in the value of his portfolio.

Kevin (2007) notes that a long position (buyer) in index futures can also be used as a hedging tool. For example, a mutual fund company has announced an investment scheme and is hopeful to receive Rs.5 000 000 within a month for investment in the stock market. The company estimates that the prices of equity shares in the market would rise considerably. It therefore faces a risk of buying the shares from the market at higher prices. In order to hedge against this risk, the company can take a long position in index futures. Suppose the NSE index Nifty stands at 2 000. The company needs 2 500 Nifty futures to safeguard its investment. It can buy 2 500 Nifty futures for Rs.2 000 per contract. If, by the end of the month, Nifty rises to 2 200 on account of a general increase of 10 per cent in equity prices the fund can close out its long position in Nifty futures by selling 2 500 Nifty futures at the current price of Rs.2 200 per contract. This transaction will amount to Rs.5 500 000 and the mutual fund would receive an excess amount of Rs.500 000. The additional funds could be used to compensate for the 10 per cent increase in the prices of shares in the stock market.

Speculators may take short or long positions in index futures in order to benefit from the future movements in the stock index (Kevin 2007, p. 252). For example, a speculator who opines that there would be a decline in share prices can take a short position in the index futures by selling the index futures at its current price. Once the share prices have gone into a decline, he may close out his short position by buying an equivalent number of index futures at the lower price prevailing in the market. In this way, he will make a profit from this transaction.

Similarly, a speculator who expects a general rise in share prices can take a long position in index futures. Suppose that he buys 100 Nifty futures for Rs.1 800 per

contract when the Nifty value is at Rs.1 785. If share prices increase and the Nifty value rises to, say, Rs.1965 within a month, the speculator can close out his long position by selling 100 Nifty futures at the current price of Rs.1 965. As a result, he would enjoy a profit of Rs.16 500.

3.2.1. Types of Futures Contracts

Gupta (2006) discusses different types of futures contracts. A cursory introduction to these types is as follows:

3.2.1.1. Interest Rate Futures

It is one of the significant financial futures instruments. Both borrowers and lenders face interest rate risk. The borrower, for example, has to notch up a heavy loss if the interest rate increases whereas the lender has to incur a loss in decreasing trend of interest rate. This instrument assists to reduce interest rate risk of lenders and borrowers. There are some interest-based securities like treasury bills, notes, bonds, debentures, euro-dollar deposits and municipal bonds. In this category, three-month maturity instruments like treasury bills and euro-dollar deposits are traded on the Chicago Mercantile Exchange (CME) whereas British Government Bonds are traded on the London International Financial Futures and Options Exchange (LIFFE).

3.2.1.2. Foreign Currency Futures

This kind of financial futures, as the name indicates, is traded in foreign currencies. Therefore it is also known as exchange rate futures. The rate of exchange changes continuously; different firms are exposed to the exchange rate risk. The assets, liabilities or cash flow of a firm undergo a change in value with the passage of time due to variation in exchange rates. So, exporters, importers, bankers, financial institutions and large companies use foreign currency futures as a hedge against the exchange rate risk.

3.2.1.3. Stock Index Futures

These futures contracts are based on stock market indices. In the US markets, various futures contracts consist of different indices like Dow Jones Industrial Average, New York Stock Exchange Index and Value Line Index, etc. One of the most striking features of these contracts is that they do not insist upon actual delivery. Traders are bound to fulfill their obligations only by a reversing trade or settlement by cash payment at the end of trading.

3.2.1.4. Bond Index Futures

Like stock index futures, these contracts are also based on particular bond indices such as Indices of bond prices. The most important example of such contracts is the Municipal Bond Index futures based on the US Municipal Bonds being traded on Chicago Board of Trade (CBOT).

3.2.1.5. Cost of Living Index Futures

These futures contracts are also known as inflation futures. These are based on a specified cost of living index such as consumer price index, wholesale price index, etc. Futures contracts based on American Consumer Price Index are traded on International Monetary Market (IMM) in Chicago. These contracts are used to hedge against unanticipated inflation which is unavoidable. Thus such futures contracts can be very advantageous to some investors like provident funds, pension funds, mutual funds, large companies and governments.

3.2.2. Forward Contracts versus Futures Contracts

Both forward and futures contracts specify a transaction to take place at a future date, and incorporate precise requirements for the commodity to be delivered, its price, its quantity, the delivery date and the place of delivery, but nevertheless the *modus operandi* of these contracts is different from one another as the following points categorically exude:[4]

- Futures contracts are always traded on an organized stock exchange. Forward contracts, on the other hand, are traded over-the-counter or between two parties who could sign a forward contract directly or indirectly through a dealer.
- The terms and conditions of futures contracts are standardized. The quantity of the asset, future period and future place are determined by the exchange

[4] For further details, see Hull 2007, pp 40-41; Bhalla 2007, pp 913-917; Apte 2007, pp 222-225; Gupta 2006, pp 65-66; Click & Coval 2004, p. 292; Haugen 2005, pp 495 ff.

whereas forward contracts are customized rather than standardized. These are tailor-made contracts in which the terms are mutually decided by the counterparties. There is no standard contract size or standard delivery arrangements. A single delivery date is usually specified.

- Futures contracts are regulated by the respective exchange where they are registered. On the other hand, forward contracts are self-regulating which do not require any registration. Hence forward contracts are riskier than futures contracts.
- Futures contracts are settled through a clearing-house which takes the guarantee to fulfill the contract. In other words, it mitigates the potential for default of the counterparties whereas forward contracts are subject to default risk.
- Futures contracts are highly liquid whereas forward contracts have no liquidity.
- Futures contracts are marked to market daily. This means that the contract price is adjusted every day as the future price for the contract changes and the contract approaches expiration. Therefore actual cash settlements occur every day between the buyer and the seller in response to these price changes. This process is called marking-to-market, and it ensures that both parties to the futures contract maintain sufficient funds in their accounts to guarantee the eventual pay-off when the contract matures. In forward contracts, price remains fixed over the life of the contract. Moreover, cash payment from buyer to seller takes place at the end of the contract only.
- In futures contracts, a margin ranging from two to ten per cent of the face value of contract is paid by both parties. This is not a partial payment of the

price. Instead, it is paid in good faith to guarantee the fulfillment of the contract. Forward contracts do not necessitate any margin.

- Futures contracts are available for delivery on a few specified dates in a year whereas forward contracts can be delivered on any date in accordance with the consent of the counterparties.
- Most of the futures contracts, approximately 95 per cent, are settled without delivery. On the contrary, more than 90 per cent of forward contracts are settled by actual delivery of the assets.

4. Derivatives Markets

As far as the trading environment of financial derivatives is concerned, it can be divided into following two categories:

1) Derivatives that are traded via specialized derivatives exchanges or other exchanges are called exchange-traded derivatives.
2) Derivatives that are traded and negotiated directly between two parties without going through an exchange or other intermediary are typically called off-exchange or over-the-counter (OTC) derivatives.

The salient features of both derivatives markets in some detail are as follows:

4.1. Exchange-Traded Market

The primary purpose of exchanges is to aggregate a large number of participants in order to maintain liquidity in a contract. Hull (2007) finds that derivatives exchanges have been in existence for a long span of time. The Chicago Board of Trade (CBOT) was established in 1848 to bring farmers and merchants together. A rival futures exchange, the Chicago Mercantile Exchange (CME) was established in 1919. The Chicago Board Options Exchange (CBOE) started trading in call options on 16 stocks in 1973. Though options were traded prior to 1973, the Chicago Board Options Exchange (CBOE) succeeded in creating an orderly market with well-defined contracts. The world's largest derivatives exchanges, in terms of transactions, are the Korea Exchange, Eurex (which lists a wide range of European products such as interest rate and index products), Chicago Mercantile Exchange, and the Chicago Board of Trade. There are some other exchanges as well which trade in futures contracts. Among them are the Chicago Rice and Cotton Exchange (CRCE), the New York Futures Exchange (NYFE), the London International Financial Futures Exchange (LIFFE), the Toronto Futures Exchange (TFE), and the Singapore International Monetary Exchange (SIMEX).

Traditionally, derivatives traders have relied on what is known as 'open outcry system'. It means that the traders meet physically on a designated floor of an exchange, shout and use a complicated set of hand signals to indicate trades they are desirous to carry out. The details of commodities on offer are already known. What is required is the agreement in principle and specification of the type and number of the contract. Exchanges are increasingly replacing the open outcry system by electronic

trading. In electronic trading, a computer algorithm takes the place of traders, monitors bids and offers, and finds traders on the other side of the market. Usually the computer screen lists the bids and offers being quoted by traders. When an order matching a bid or offer enters the computer, the computer algorithm matches it automatically, sends the match to the clearing-house for clearing, and updates bids and offers displayed on the screen. Although American exchanges still rely on the open outcry system, many European and other overseas exchanges have turned to electronic trading.

4.2. Over-The-Counter Market

Not all trading is done on exchanges. The over-the counter (OTC) market is an important alternative to exchanges. It is a network of dealers who do not meet physically. Instead, they use telephone and computer. Deals are usually finalized between two financial institutions or a financial institution and one of its clients. Financial institutions often act as market makers for commonly traded instruments. This means that they are always prepared to quote both a bid price (a price at which they are ready to buy) and an offer price (a price at which they are ready to sell). A key advantage of over-the-counter market is that the terms of a contract are not predetermined. Instead, market participants are free to negotiate any attractive deal. Financial instruments such as swaps, forward rate agreements and exotic options are almost always traded in over-the-counter market.

Both exchange-traded and over-the-counter markets are very huge. However, trading in over-the-counter market is typically much larger than that of exchange-traded market.[5]

According to the Bank for International Settlements (2016) the outstanding positions in OTC derivatives markets increased in the first half of 2016. The notional amount of outstanding OTC derivatives contracts increased from $493 trillion to $544 trillion between the end of December 2015 and the end of June 2016. Nevertheless notional amounts remained well below the peak of $710 trillion reached at the end of December 2013. The gross market value of outstanding derivatives contracts also rose from $14.5 trillion to $20.7 trillion in the first half of 2016. Gross credit exposures rose from $2.9 trillion at the end of December 2015 to $3.7 trillion at the end of June 2016.

5. Types of Traders

Derivatives markets have a great opportunity for liquidity by attracting different types of traders. When an investor wants to take one side of a contract, he can find someone else quite easily who is prepared to take the other side (Hull 2007, p. 8). In this perspective, the following categories of traders can be identified:

[5] For further details, see Hull 2007, pp 1-3

5.1. Hedgers

Hedgers are traders who enter into derivatives contracts to safeguard their position from adverse movements in the prices of commodities concerned. Hedgers provide a cost-effective tool in order to manage price risk (Gurusamy 2004, p. 577). Various traders and producers can benefit from favorable price movements and hedge against price risk. For example, a miller and a grain farmer mutually conclude an agreement at time 0 for the delivery of a specified quantity and quality of grain at a certain time in the future. The important element of this transaction is that the price to be paid for the grain is fixed at time 0. The reason for the immediate price determination is to remove uncertainty concerning the future spot price of grain. Either party might take a great deal of gain or loss if the price movement is in his favour or against him. Since both parties face price risk in the opposite directions it is grist to their mill to agree on a price in advance which suits the financial interests of both of them. Then the grain farmer can know very well how much production costs might safely be invested in order to make a profit, and the miller, on the other hand, can know as well at what lucrative price he should sell flour at a competitive market.

5.2. Speculators

Hedgers are aspirant to avoid an exposure to adverse movements in the price of an asset, speculators assume the role of either the bull or the bear depending upon their perceptions about the price movements (Gurusamy 2004, p. 577). They bet that the price will either increase or go down (Hull 2005, p. 8). Indulgence of speculators in the market is shaped by the expected future prices of the underlying assets. For

instance, a speculator believes that a drug company will find a cure for cancer next year. If he buys the stock for £500 and it goes to £1 000 after the panacea is announced he will have a 100 per cent return. Speculators may trade with other speculators as well as hedgers. In derivatives markets, the volume of speculative trading is far higher than the volume of hedging. However, speculation is, as Strong (2006) observes, not the primary purpose of these markets.

5.3. Arbitrageurs

In economics and finance, arbitrage is the practice of taking advantage of a price differential between two or more markets. Arbitrageurs are averse to risk. They enter into such contracts that can give them risk-free profits. They always look for price imperfections in the markets. The presence of different prices in various contracts provides opportunities for arbitrage (Gurusamy 2004, p. 577). Arbitrage is not simply an act of buying a product from one market and selling it in another market for a higher price at some later time. Instead, the transactions must occur simultaneously in order to refrain from the risk that prices may change in one market before the completion of both transactions. Practically, it is possible in those securities and financial instruments which are traded electronically.

Say that there is a stock that is traded on both the New York Stock Exchange and the London Stock Exchange. The stock price is $172 in New York and £100 in London at a time when the exchange rate is $1.75 per pound. An arbitrageur can simultaneously buy 100 shares of the stock in New York, and sell them in London to obtain a risk-free profit of $300 in the absence of transaction costs.

Transaction costs may eliminate the profit of a small investor. However, a large investment house faces very low transaction costs in both the stock market and the foreign exchange market. It finds arbitrage opportunity very attractive and tries to take as much advantage of it as possible (Hull 2005, p. 12).

6. Advantages of Derivatives

Financial derivatives are supposed to have the following advantages:[6]

- The most important advantage of financial derivatives is to control, shift, and manage the risk exposure resulting from the volatile movement in the prices of underlying assets. Farmers, producers, and manufacturers are exposed to the risk of price fluctuation of the commodity they produce or have in their inventory. Derivatives assist them to shift or modify appropriately risk characteristics of their portfolios. New derivatives instruments such as futures and options are known to be very effective in mitigating risk exposure through various strategies like hedging and arbitrage (Gurusamy 2004, p. 568).
- Derivatives instruments are cost-effective which enable traders and producers to finance their supply requirements more efficiently. For example, in an attempt to ensure the raw material requirements for several months ahead, a miller might find that the future price of the commodity he needs is lower than the cash market price. It would therefore be cost-effective for him to utilize derivatives, and ensure necessary supplies at the right time. On the other hand, the same miller possesses a large quantity of a certain commodity but he fears

[6] For details, see Gupta 2006, p. 15; Gurusamy 2004, p. 568; Strong 2006, pp 7-9

a fall in prices in the future. Derivatives would, in this case, enable him to sell the commodity he possesses ahead of time and protect him against possible losses.

- Derivatives serve as barometers of the future trend in prices that is expected to prevail for a certain period of time. A derivatives market is necessarily concerned with anticipating a future price for the asset dealt in (Gurusamy 2004, p. 568). Such a price discovery mechanism plays a pivotal role in suitable and superior allocation of resources in an efficient financial system.
- In derivatives trading, no immediate full amount of the transaction is required to be paid because most of them are based on margin trading. As a result, a host of traders like hedgers, speculators and arbitrageurs operate in such markets. Hence derivatives trading enhances liquidity and reduces transaction costs in the markets of underlying assets.
- Derivatives assist investors, traders, and managers of large pools to devise such strategies through which they can make proper asset allocation decisions and achieve profitable investment goals.
- It has been observed from the derivatives trading that they smooth out price fluctuations, squeeze the price spread, integrate price structure at different points of time, and remove gluts and shortages in the markets.
- Derivatives instruments encourage competitive trading in the markets. Different risk-taking preferences of the market operators like hedgers, speculators and arbitrageurs are present in the markets.

7. Critiques of Derivatives

Apart from the benefits of derivatives outlined above, Gupta (2006) points out that there are some critical analyses of derivatives as well that rate financial derivatives a flagrant cause of destabilization, volatility, and oscillation in financial markets. In this section, a few of them are being canvassed:

- One of the most important arguments against financial derivatives is that they promote speculative activities in the markets. It has been observed from different financial markets throughout the world that hardly one or two per cent of traded derivatives instruments are settled by actual delivery of the underlying assets (Gupta 2006, p. 16). Therefore speculation has become the primary purpose of the existence, evolution, and growth of financial derivatives. Sometimes these speculative trading practices by professionals as well as amateurs affect adversely genuine producers and traders. Some financial experts and economists believe that speculation causes better allocation of resources, reduces fluctuations in prices, restores equilibrium between demand and supply, removes periodic gluts and shortages and thus brings efficiency to the market, but it is to all intents and purposes unlikely to own all of these so-called assertions. Most of the speculative activities prevalent in the derivatives markets are professional speculations which trigger off instability in the markets. It is a reality that sudden and sharp variations in prices are normally due to common, frequent, and widespread consequences of speculation.

- Financial derivatives are supposed to be efficient instruments of risk management. This is indeed a one-sided argument. It has been observed that derivatives markets, specifically OTC market being particularly customized, are privately managed and negotiated and thus they are highly risky. In this respect, empirical studies have shown that derivatives used by the banks have not resulted in mitigation of risk. Rather some other types of risk have evolved from them. It is further argued that if financial derivatives are tools of risk management then why 'government securities' which are risk-free securities, are used for trading in interest rate futures which is one of the most popular derivatives instruments in the world.
- Financial derivatives may cause severe fluctuations in asset prices. They can be helpful in price stability if there exists a properly organized, competitive and well-regulated market. Unfortunately, this is not the case in real world and derivatives sometimes spark off the price instability rather than stability.
- Derivatives instruments have excessive risk not only for their users but also for whole financial system. The fear of micro and macro financial crises has led to the unchecked growth of derivatives which have consequently turned many market players into big losers (Gupta 2006, p. 16).

The huge losses incurred by the use of derivatives have made many financial institutions very wary. The stories behind the losses emphasize the point that derivatives can be used either to reduce risk or take a risk. Most losses came about when derivatives were used inappropriately. Employees who had an implicit or

explicit mandate to hedge against risks faced by their companies decided to speculate instead.[7]

The key lesson to be learnt from the losses is the importance of internal controls (Hull 2007, p. 738). Gurusamy (2004) also observes that most of the episodes of losses in derivatives markets have arisen due to the lack of transparency and weak internal controls. Senior management should lay down clear and unambiguous guidelines in relation to the use of derivatives instruments.

8. Regulatory Policies on Derivatives

Saunders and Cornett (2007) highlight that derivatives instruments are subject to the following three levels of institutional regulations:

Firstly, regulators of derivatives determine 'permissible activities' that the institutions may engage in.

Secondly, once the permissible activities are determined, the institutions engaging in those activities are strictly monitored.

Thirdly, regulators attempt to judge the overall integrity of each institution engaged in derivatives trading by assessing the capital adequacy of the institution and by enforcing regulations to ensure compliance with capital requirements.

The Securities and Exchange Commission (SEC) and the Commodities Futures Trading Commission (CFTC) are often regarded as the regulators. The SEC regulates

[7] For further details, see Abdelwahab 2007, p. 123

all securities traded on national securities exchanges, including several exchange-traded derivatives. The SEC's regulations of derivatives incorporate price reporting and margin requirements. The CFTC also regulates all national futures exchanges. It approves of new or proposed contracts to ensure that they have an economic purpose, conducts economic studies of the markets, enforces rules set by individual exchanges, and provides regulatory surveillance for futures market participants. Its regulations include minimum capital requirements for traders, reporting and transparency requirements, antifraud and antimanipulation regulations, and minimum standards for clearing-house.

Main bank regulators like Federal Reserve and the Federal Deposit Insurance Corporation (FDIC) have also issued uniform guidelines for banks taking positions in forward and futures contracts. According to these guidelines a bank is required to establish internal guidelines regarding its hedging activity, establish trading limits, and disclose large contract positions that materially affect bank risk to shareholders and outside investors. The policy of regulators as a whole is to encourage the use of futures for hedging and discourage for speculation.

The individual futures and options exchanges also set and enforce many rules on their members designed to ensure smooth operations and financial solvency of the exchange. These exchanges are also responsible for setting trading procedures, hours of trading, contract characteristics, margin requirements and so on.

In contrast to futures and options markets, swap markets are governed by very few regulations. There is no central governing body which oversees the operations of swap

markets. Since commercial banks are, however, the main swaps dealers swap markets are indirectly subject to regulations imposed by Federal Reserve, the FDIC and other bank regulatory agencies charged with monitoring bank risks.[8]

9. Conclusion

The paper discussed the nature and trading mechanism of forward contracts and futures contracts. Theoretically financial derivatives are supposed to distribute risk among market participants in accordance with their ability to assume them. Derivatives assist investors, traders, and managers of large pools to devise such strategies through which they can make proper asset allocation decisions and achieve profitable investment goals.

The paper examined a number of objections to financial derivatives into the bargain. The most important argument against derivatives is that they promote speculative activities in the financial markets. Sometimes these speculative activities carried out by professionals as well as amateurs affect adversely genuine producers and traders. The huge losses incurred by the use of derivatives have made many financial institutions very wary. Most losses came about when derivatives were used inappropriately. Employees who had an implicit or explicit mandate to hedge against different kinds of risk faced by their companies decided to speculate instead. The key lesson to be learnt from the losses is the importance of internal controls. Senior management should lay down clear and unambiguous guidelines in relation to the use of derivatives instruments.

[8] See Hull 2007, pp 37-38; Saunders & Cornett 2007, pp 670-671

References

Abdelwahab, O. (2007). *Developmental Perspectives on Financial Innovation in Forward and Futures Derivatives: A Critical Discussion with Special Consideration of Islamic Banks and Financial Institutions*. [On-line]. [Accessed 13th November, 2011]. Available from World Wide Web: http://opus.kobv.de/tuberlin/volltexte/2007/1568/pdf/abdelwahab_osama.pdf

Apte, P.G. (2007). *International Financial Management*. Tata McGraw-Hill Publishing Company Limited, New Delhi

Bacha, O.I. (1999). Derivative Instruments and Islamic Finance: Some Thoughts for a Reconsideration. *International Journal of Islamic Financial Services*, 1(1). pp 9 -25

Bank for International Settlements. (2016). *OTC Derivatives Statistics at End-June 2016*. [On-line]. [Accessed 27th March, 2017]. Available from World Wide Web: www.bis.org/publ/otc_hy1611.pdf

Bhalla, V.K. (2007). *Investment Management: Security Analysis and Portfolio Management*. S. Chand & Company Limited, New Delhi

Click, R.W. & Coval, J.D. (2004). *The Theory and Practice of International Financial Management*. Prentice-Hall of India Private Limited, New Delhi

Gupta, S.L. (2006). *Financial Derivatives: Theory, Concepts and Problems*. Prentice-Hall of India Private Limited, New Delhi

Gurusamy, S. (2004). *Financial Services and Markets*. Vijay Nicole Imprints Private Limited, Chennai

Haugen, R.A. (2005). *Modern Investment Theory*. Prentice-Hall of India Private Limited, New Delhi

Hull, J.C. (2005). *Introduction to Futures and Options Markets*. Prentice-Hall of India Private Limited, New Delhi

Hull, J.C. (2007). *Options, Futures and Other Derivatives*. Prentice-Hall of India Private Limited, New Delhi

Kevin, S. (2007). *Security Analysis and Portfolio Management*. Prentice-Hall of India Private Limited, New Delhi

Saunders, A. & Cornett, M.M. (2007). *Financial Markets and Institutions*. Tata McGraw-Hill Publishing Company Limited, New Delhi

Smullen, J. & Hand, N. (eds.) (2005). *Oxford Dictionary of Finance and Banking*. Oxford University Press

Strong, R.A. (2006). *Derivatives: An Introduction*. Eastern Press Pvt. Limited, Bangalore