DERIVATIVES FOR CAPITAL MARKET EFFICIENCY

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ABSTRACT

Derivative contracts transfer risk, especially price risk, to those who are able and willing to bear it. How they transfer risk is complicated and frequently misinterpreted. Derivatives have also been associated with some spectacular financial failures and with dubious financial reporting. This paper will discuss the role of derivative products in capital flows, especially in providing a means of both reducing and enhancing market risks associated with given net flows. It will emphasize how derivatives can be used to evade risk-control or prudential regulation, circumvent capital controls, drive the dynamics of currency instabilities, and obscure true risk positions and thereby undermine the usefulness of balance of payments capital account categories. Financial derivatives (credit default swaps, options, etc) are screwing over the economy because too much money is being poured into the invisible (derivatives) market. This probably undervalues the prices of the underlying goods/assets/etc in the real market (instead, investors should just simply buy the stocks, etc and the increased demand would drive up the stock price and it would make everyone happy). All these derivatives may contribute to risk… it may encourage people to take on unreasonable risk and could lead to drastic market volatility.

Key words: Derivatives, Dhaka Stock Exchange, Risk Management, Capital Market, Market Efficiency.

1.0 INTRODUCTION

In the financial sector the assets are characterized by the cash flows and maturity. To clarify this point let us look at Equity instruments such as stocks, they have uncertain maturity periods and uncertain cash flows and on the other hand there are the Debt instruments such as Bonds that have fixed maturity periods and fixed cash flows. Furthermore there are Insurance instruments, which are characterized by fixed cash flows but an uncertain maturity period. This leaves us with financial assets, which have a fixed maturity period but uncertain cash flows; such financial assets are called Derivative instruments.

Derivative instruments have been a feature of modern financial markets for several decades. They play a vital role in managing the risk of underlying securities such as bonds, equity, equity indexes, currency, and short-term interest rate asset or liability positions. In the commodity markets they have been around for a great deal longer. In modern times the Chicago Board of Trade, for example, was set up in 1848 for the exchange trading of agricultural products such as wheat and corn.

The Exchange put in place a mechanism that would play an important role in helping the agricultural community to plan for the future by enabling users of derivatives to lock-in the prices they will receive for their goods before they were even ready for harvesting. In 1865 the Chicago Board formally established its General Rules. This opened the floodgates for spot and forward trading of commodities – which ultimately would be delivered to an end user – and in 1870 the New York Cotton Exchange, was established.

So just what are these derivatives and what roles do they play? A working definition of a derivative is: "an instrument whose existence and value is contingent upon the existence of another instrument or security". The term 'Derivative' indicates that it has no independent value, i.e. its value is entirely 'derived' from the value of the underlying asset. The underlying asset can be commodities, equities (stocks), bonds, interest rates, exchange rates, bullion, currency, livestock or indexes (such as a stock market index, consumer price index (CPI) or even an index of weather conditions, or other derivatives itself.

In other words, derivative means a forward, future, option or any other hybrid contract of predetermined fixed duration, linked for the

purpose of contract fulfillment to the value of a specified real or financial asset or to an index of securities.

Mention derivatives to the average investor and visions arise of Long-Term Capital Management, a large hedge fund whose failed risk-arbitrage trading strategies nearly collapsed the global financial system in 1998, and Enron, where misuse of derivatives played a role in one of the largest bankruptcies in U.S. history.

2.0 Literature Reviews

Investopedia says, "In finance, a security whose price is dependent upon or derived from one or more underlying assets. The derivative itself is merely a contract between two or more parties. Its value is determined by fluctuations in the underlying asset. The most common underlying assets include stocks, bonds, commodities, currencies, interest rates and market indexes. Most derivatives are characterized by high leverage. "

Brigham and Houstom say, "Derivatives are securities whose values are determined by the market price of some other assets. Derivatives include *options*, whose value depends on price of some underlying assets; *interest rate and exchange rate futures and swaps*, whose value depends on interest rate and exchange rate levels and *commodity futures*, whose value depends on commodity prices"

According to Oxford Dictionary of Business, "A financial instrument, the price of which has a strong correlation with a related or underlying commodity, currency or financial instrument. The most common derivatives are *futures contracts* and *options*. These standard products can be customized with regard to maturity, quantity or pricing structure for a particular client. A derivatives market is a future or options market derived from cash market."

Although derivatives have been used in agricultural markets since the mid-1800s, much of the growth in their use over the past several decades has been in financial markets as a direct response to increased volatility in credit and foreign exchange markets. After the decision was made to allow exchange rates to "float," they became very volatile. The futures exchanges and OTC market's responded by creating derivative products that could be used to mitigate financial risks related to this volatility. Today the most heavily traded contracts on futures exchanges are on such products as U.S. Treasury Bonds, the S&P 500 stock index, and Eurodollars. Likewise, the most heavily traded products in the OTC markets are contracts based on interest rates and foreign currencies.

The global market for OTC derivatives amounted to $111 trillion in December 2001 up from $72 trillion in June 1998. The increase represents an average yearly rise of 11.4 percent. Interest rate derivatives accounted for the greatest activity, with $78 trillion in notional amounts outstanding as of December 2001, followed by foreign exchange markets, with $17 trillion outstanding. OTC derivatives on physical commodities represented the least active category of contracts, with an outstanding notional value of $0.6 trillion as of December 2001. Although that amount is small overall in comparison with interest rate and foreign exchange products, the yearly average growth rate of 8 percent since 1998 is comparable.

While trading in OTC derivatives has grown rapidly over the past decade, exchange-based trading in futures contracts, particularly in financial and energy commodities, has also progressed. From 1991 to 2001, the total volume of trading in futures contracts increased by 139 percent, or 9.1 percent per year on average. The share of energy-related products (petroleum, natural gas, coal, electricity, etc.) was 13 percent in 1991 and 12 percent in 2001. The contract volumes for energy-related products over the 10-year time period grew by a total of 115 percent, or 8 percent per year. As the energy industry moves toward a more competitive environment, increasing price volatility of energy commodities can be expected to induce further growth in the demand for energy futures and option contracts.

3.0 OBJECTIVES OF THE STUDY

Valuation and risk assessment models for derivative instruments and securities with derivative features.

- Theory and practice of trading in any exchange-traded or OTC derivative product.
- Risk management applications of derivatives, and of contingent claims theory.
- Empirical studies of behavior of prices and markets for derivatives and for underlying assets.

- Regulatory issues (from an economic as opposed to a purely legal perspective).

- Application of derivatives concepts to other areas, such as insurance, corporate finance, and banking.

4.0 THE FUNDAMENTAL PROBLEMS THAT CONTRIBUTE TO DERIVATIVES' NEGATIVE IMAGE

With this in mind, are derivatives even appropriate for the average retail investor? One aspect of derivatives is certain - they have an image problem. There are four fundamental problems that contribute to derivatives' negative image:

4.1 Bad press. “If it isn't bad news, it isn't news”. Stories in the press tend to focus on the illegitimate abuse of derivatives rather than how they are used legitimately.

4.2 Investors' misinformed perceptions and uninformed opinions

4.3 Improper suitability given an investor's resources and temperament

4.4 Lack of investor education

The retail public reads these disaster stories and form opinions based on nothing else but what they read in the paper or see on television. The consequence of this is that they tend to follow only the headline news and focus on the illegitimate abuse of derivatives rather than on their legitimate ones.

5.0 MAJOR CLASSES OF DERIVATIVES

There are three major classes of derivatives: Forwards/Futures, Options & Swaps. Let us deal with each at a time.

5.1 Futures/Forwards, which are contracts to buy or sell an asset at a specified future date.

A Forward contract is a contract by which two parties irrevocably agree to settle a trade at a future date, for a stated price and quantity. No money changes hands at trade time.

Example: On January 01, 2008, Mr. X agrees to buy 100 gms. Of gold from Mr. Y on December 31, 2008 at Tk.5, 000/tola. Tk.5, 000/tola is called the “forward price of December 31, 2008 gold”. The buyer Mr. X is said to be “Long”. The seller Mr. Y is said to be “Short”.

A year later...

Case 1: Price of gold is Tk.6000/tola. This means: Mr. X gets to buy gold worth Tk.6000 at Tk.5000. Mr. Y has to deliver gold worth Tk.6000 at Tk.5000.

Case 2: Price of gold is Tk. 4000/tola. This means: Mr. X has to buy gold worth Tk.4000 at Tk.5000. Mr. Y can sell gold worth Tk.4000/tota at Tk.5000 per tola.

Why is this useful trade? For both Mr. X and Mr. Y, the price of gold has not fluctuated for a year - it was Tk.5000 at the start of their contract and remains Tk.5000 at the end of their contract. They no longer face price risk. Please note here that in the future, the underlying market will be either at Case 1, or Case 2. In either case, one of the counterparties will suffer a loss while the other will benefit.

However, Futures contract, quite simply, are forward contracts, which are traded on an exchange. That is a future is an agreement (obligation) to buy or sell a given quantity of a particular asset, at a specified future date, at a pre-agreed price. Futures contracts are characterized by standard delivery dates, trading units, terms and conditions.
An investor can "open" a futures position by either buying or selling a future. The investor can "close" their futures position by doing the opposite - either selling or buying the same future. In practice, most futures contract positions are "closed out" before they expire.

If the investor holds a view that the underlying asset will raise you could buy futures - known as a LONG futures position - which commits the investor to take delivery of the underlying shares, or equivalent cash value, at a pre-arranged price and by a certain date.

If the investor’s view is that the share prices for the underlying asset will fall, the investor could sell futures - known as a SHORT futures position - which commits the investor to deliver the underlying shares, or equivalent cash value, at a prearranged price and by a certain date.

Futures contracts can be used in many different ways depending on the investor’s investment objectives. Here are two examples:

- To safeguard or "hedge" the investor's existing underlying assets if the investor believes the price will fall

The investor could consider opening a futures position to protect his existing asset (e.g. your share portfolio) in the event of a down turn in prices. As a holder of the asset, the investor can sell futures against his equity portfolio to avoid making a loss and without having to incur the costs associated with selling his assets. To "close" the futures position by buy the equivalent amount of futures in the market. Losses in the underlying asset can therefore be compensated by profit made on the futures position.

- To profit from volatile market conditions

Futures provide the opportunity to profit from the upward and downward turns in the prices of underlying assets. For a view that market prices will raise, consider buying futures (remember this is a LONG futures position). Conversely, for a view that market prices will fall, consider selling futures (remember this is a SHORT futures position). If the view held materializes, the position can be closed by undertaking an equal and opposite position in the same market in order to profit from the price difference. Remember to close a long position the investor would sell futures and to close a short position the investor would buy futures.

Futures can transform your trading and investment activity; increasing profit potential and giving you the means to control risk too.

5.2 Options, which are contracts that give a holder the right (but not the obligation) to buy or sell an asset at a specified future date.

An option simply gives the holder the right, but not the obligation, to buy (call), or sell (put) a specified underlying asset at a pre-agreed price on or before a given date.

Imagine there is a plot of land next to where you live. The owner of the land knows that it is only worth selling if he obtains planning permission. But the owner needs some funds now so he offers you the option to buy that land at an agreed amount during a fixed period of time. You know that you want the land but only if there is planning permission so you agree to pay him a fee for the option to buy the land. The fee is just a small percentage of the amount agreed. In time, the planning permission is granted and you exercise the option and buy the land. If planning permission had not been granted during the agreed period of time, you would not exercise your option and would have only lost the fee you had paid - but you would have safeguarded against anyone else buying that land.

There are two types of options - CALLS and PUTS.

- The buyer of a ***CALL*** option acquires the right, but not the obligation, to buy the underlying asset at a fixed price. Call options generally rise in value if the price of the underlying asset rises.
- The buyer of a ***PUT*** option acquires the right, but not the obligation to sell the underlying asset at a fixed price. Put options generally rise in value if the price of the underlying asset falls.

The buying of options involves limited risk - that is to say you cannot lose any more than the premium paid at outset.

It is also possible for you to write or sell options. The writing of call options, although having a wide range of uses, is a potentially high-risk strategy requiring a high degree of product knowledge. Since exercise can involve the writer in a substantial financial commitment, option writers are required to deposit margin with the broker to ensure the obligation of the contract can be met in full if required.

An option can be granted over many assets - including soft and agricultural commodities, bonds, shares and share indices. Equity options are financial instruments whose price movements are derived from the price movements of an underlying share price or index and hold a host of investment opportunities for you as a private investor.

Options are extremely flexible instruments that can be used in a variety of different ways - either as a way to profit from short-term market movements or as a part of longer-term investment strategies. Here are two:

I. As a form of insurance against a fall in the price of the underlying as.

Imagine the investor holds a particular asset and intend to sell it at a date in the future. If the investor's view is that the price of the asset will fall, he could consider buying a put option, which gives the right, but not the obligation, to sell the underlying asset at a fixed price by a certain date in the future. If the investor's view is correct, he could exercise his put option and

sell the underlying asset for more than the prevailing market value.

II. To participate in price movements of the underlying asset without buying or selling the underlying asset.

If the investor's view is that the price of the underlying asset will rise, he could consider buying a call option, which gives the right, but not the obligation, to buy the underlying asset at a fixed price by a certain date in the future. If his view is accurate, the value of his call option will increase. To realize his profit, he could close his position by selling the call option back to the market.

Conversely, if the investor's view is that the price of the underlying asset will fall, he could buy a put option, which gives the right, but not the obligation, to sell the asset at a fixed price. If his view is accurate, the value of his put option will increase. To realize your profit, close the position by selling the put option back to the market.

The main advantages that options may give an investor: they may provide increased cost efficiency; they may be less risky than equities; they have the potential to deliver higher percentage returns; and they offer a number of strategic alternatives. With advantages like these, one can see how those who have been using options for a while would be at a loss to explain options' lack of popularity in the past.

Many investors have avoided options, believing them to be sophisticated and, therefore, too difficult to understand. Many more have had bad initial experiences with options because neither they nor their brokers were properly trained in how to use them. The improper use of options, like that of any powerful tool, can lead to major problems.

5.3 The final kind of derivatives is ***Swaps***, where the two parties agree to exchange cash flows.

These instruments are based on an agreement between two counterparties to exchange a series of cash flows. The cash flows are almost always calculated by reference to the behavior of an index and are scaled by an agreed nominal principal. Swaps are now available on interest rates, currencies, equity, credit, property, weather indices and many types of commodities.

6.0 ANALYSIS OF THE SAFE GUARDING STATUS OF DERIVATIVES FOR RETAIL INVESTORS

Finally, we come to the golden question of whether derivatives are safe for retail investors. However, before we answer this question we must reflect on the four fundamental perceptions or opinions the public has about derivatives:

6.1 It's an institutional market. Yes, it is. According to research conducted by the consulting firm Greenwich Associates, notional volume in interest rate derivatives for 2005 was nearly $1.5 trillion; 85% of which came from 260 institutions trading more than $1 billion each. Derivatives have a global marketplace - 27% originates in the United States and Canada, 63% in the U.K. and Europe, and the rest in Asia and the Pacific Rim.

6.2 Derivatives are too complicated. Yes, some of them are.

6.3 Derivatives are expensive.

6.4 Derivatives are purely speculative and highly leveraged. This objection relates directly to the use vs. abuse problem. When hedge vehicles are used as a primary investment, they become extremely risky business. The problem is that much of the investing public does not appreciate that when properly used, derivatives can actually mitigate risk, rather than exacerbate it.Many retail investors equate risk in terms of leverage and market risk and hesitate to appreciate that leverage works both ways. It is commonplace for the public to not consider systemic risk, single stock ownership risk, event risk, or credit risk. They also may not understand that some derivatives, such as futures and options, by definition, are contract markets. When used as an investment instead of a hedge vehicle, it's a zero-sum game. The fact is, when used properly, derivatives tend to be no riskier than the underlying asset from which they are derived. When you use a hedge vehicle as an investment by itself, the risks grow exponentially.Does all this mean the retail investor can't or shouldn't get involved? No, of course it doesn't. The whole idea behind many derivative or alternative products is a non-correlated return. When used as a hedge vehicle, derivatives can enhance returns and reduce risk. Whether derivatives and alternative investments have a place in your portfolio is a question only you can answer. It all comes down to suitability.

7.0 STRATEGIC APPLICATIONS OF DERIVATIVES

Derivatives, like most tools, are neutral until utilized. It is with utilization that positive and negative attributes can identify. The main utilization issue related to the use of derivatives is the use to which management is applying derivative strategies - hedging or speculating. Hedging is generally perceived to be good and speculating is generally perceived to be bad. However, there are three thoughts that should be kept in mind when considering these generalizations:

7.1 Hedging rationale and the related documentation is oftentimes cleverly utilized to disguise speculation. Therefore, the real issue is how to properly distinguish hedging from speculating. This is more difficult than it would appear. Many would point to a textbook description to describe an appropriate hedge. Textbook descriptions are just that. They are used to illustrate hedging concepts and principles. Real time implementation, under changing market conditions, has considerably more imperfections than what can be adequately described in a textbook illustration. However, these imperfections are not justification for speculating. They are simply an additional risk that management must learn how to manage. The key to distinguishing between hedging and speculating rests in management's discipline in consistently applying the precepts outlined in the foregoing risk management process discussion.

7.2 Speculation is an inherent part of human behavior and when managed properly can produce very constructive results. However, some entities are precluded, by regulations or internal policies and procedures, from speculating with derivatives. The paradox of this is that these same entities, for the most part, are allowed to speculate through policy decisions and cash market transactions. And, furthermore, are, in effect, speculating when they are not hedged. Therefore, the issue becomes one of knowing when and how to properly speculate as a function of the business and regulatory environment within which the management activity is taking place.

7.3 Regardless of whether management is hedging or speculating, there is one very dominant consideration inherent in both - prudent management of the risks associated with the underlying activity.

8.0 RISK CHARACTERISTICS OF DERIVATIVES

The main types of risk characteristics associated with derivatives are:

- **Basis Risk** This is the spot (cash) price of the underlying asset being hedged, less the price of the derivative contract used to hedge the asset.

- **Credit Risk** Credit risk or default risk evolves from the possibility that one of the parties to a derivative contract will not satisfy its financial obligations under the derivative contract.

- **Market Risk** This is the potential financial loss due to adverse changes in the fair value of a derivative. Market risk encompasses legal risk, control risk, and accounting risk.

9.0 ARGUMENTS FOR AND AGAINST DERIVATIVES

There is a debate going on in the Bangladeshi financial circles on the issue of introduction of derivatives. World over, in developed financial markets, these instruments have been in vogue for quite some time now.

9.1 The arguments in favor are as follows:

9.1.1 As a hedging tool: Derivatives provides an excellent mechanism to hedge the future price risk. Think of a farmer, who doesn't know what price he is going to get for his crop at the time of harvest. He can sell his crop in the futures' market & lock in the price. If the future spot price is more than the futures price, he can take the off setting position & can get out of the market (with a marginal loss). Otherwise he will get the locked in price.

9.1.2 For risk management: Derivatives provide an excellent mechanism to Portfolio Managers for managing the portfolio risk and to Treasury Managers for managing interest rate risk. The importance of index futures & Forward Rate

Agreement (FRA) in this process can't be overstated.

9.1.3 A better avenue for raising money: With the introduction of currency & interest rate swaps, Bangladeshi corporate will be able to raise finance from global markets at better terms.

9.1.4 Price discovery: These derivative instruments make the spot price discovery more reliable using different models like Normal Backwardation hypothesis. These instruments will cause any arbitrage opportunities to disappear & will lead to better price discovery.

9.1.5 Bring the depth of financial markets: When a financial market gets such sort of risk-management tools, its depth increases since the Institutional Investors get better ways of hedging their risks against unfavorable market movements.

9.1.6 Derivatives market on Bangladeshi underlying elsewhere: These days, with the advent of technology, Bangladeshi prices are available globally. Nothing prevents any foreign market from launching derivatives on these Bangladeshi underlying. This will put Bangladeshis in a disadvantageous position as they can't take the advantages of derivatives of securities or commodities traded in India but someone lese can take. So we will have to move fast in this direction.

9.1.7 Empirical evidence: There is strong empirical evidence from other countries that after derivative markets have come about, the liquidity and market efficiency of the underlying market has improved.

9.2 Now taking a look at arguments against

9.2.1 Unnecessarily increase in the speculation: Many people fear that these instruments will unnecessarily increase the speculation in the financial markets, which can have far reaching consequences.

9.2.2 Market efficiency: It is a true fact that the Bangladeshi markets are not mature & efficient enough to introduce these instruments. These instruments require a well functioning & mature spot market. Like recently The Economic Times reported the strong correlation of Bangladeshi equity markets to the NASDAQ. Such type of market imperfections makes the functioning of derivatives market all the more difficult.

9.2.3 Volatility of spot market: The increased speculation & inefficient market will make the spot market more volatile with the introduction of derivatives.

9.2.4 Risk of counter party: Most of the derivative instruments are not exchange traded. So there is a counter party default risk in these instruments. Again the same Barings case, Barings declared itself bankrupt when it faced huge losses in these instruments.

9.2.5 Liquidity risk to derivative trader: Liquidity of a market means the ease with which one can enter or get out of the market. There is a continued debate about the Bangladeshi market's capability to provide enough liquidity to derivative trader.

10.0 CONCLUDING REMARKS

So one can see that the pros of derivatives far outweigh the cons. And moreover, by imposing margin requirements, by limiting the exposure one can take and other measures like that, these vices of derivatives can be controlled. The importance of derivatives for any financial market can't be overstated.

What will happen to Bangladeshi Financial market, when the derivatives will be launched, is yet to be seen, but for the market & the institutional investors, it's a welcome step.

BIBLIOGRAPHY

1. Fundamental of Financial Management (International edition), Brigham and Houstom, Thomson South Western.
2. Oxford Dictionary of Business, Oxford University Press, Third Edition, 2005-06.
3. Rationale for Derivatives Markets- A Brief Review of Why Efficient Markets Need Derivatives, Inya Ivkovic, Journal of Derivatives, Jan 22, 2008
4. Introduction to Futures and Options Markets, Hull, John. (1998) 3rd ed. Upper Saddle River, NJ: Prentice Hall.
5. Futures, Options and Swaps, Kolb, Robert. (1995) 2nd ed. London: Blackwell.
6. Statement of Financial Accounting Standards (SFAS) No. 133, Accounting for Derivatives Instruments and Hedging Activities. (1998). Norwalk, CT: Financial Accounting Standards Board (FASB).
7. Risk Management of Financial Derivatives, Comptroller's Handbook, Comptroller of the Currency Administrator of National Banks, January 1997.
8. Derivatives and Risk Management in the Petroleum, Natural Gas, and Electricity Industries, Energy Information Administration, Official Energy Statistics from U.S. Government, 2001-2002.