

FINANCIAL DERIVATIVES - MEANINGS BEYOND SUBPRIME CRISIS STIGMA

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Abstract

Derivatives are designed as complex financial instruments and their main aim is to manage the risk associated with the underlying asset, in order to ensure against fluctuations in value, or to profit from periods of inactivity, instability or decline. In recent years financial derivatives have experienced a fulminant development and also they have been perceived as an effective lever of the modern economy. The subprime crisis was triggered by a quite significant financial infrastructure glitch, which coalesced around certain factors influence, such as : highly permissive regulation of financial markets, speculative bubbles, underperforming risk management, liquidity injections and structural imbalances. Despite the fact that is a innovative segment and quite difficult affordable as understanding level of the operation mechanisms, financial derivatives were only the tool triggering this global dimension crisis.

Key words : financial derivatives, subprime crisis, global imbalances, financial engineering, risk management

JEL classification : G01, G21, G32

1. Introduction

Financial derivatives represent a relatively recent segment which is characterized by continued and extremely rapid growth. Currently, financial derivative instruments are traded extensively within the stock markets consolidated and regulated (exchange-traded derivatives), within the framework of non-regulated markets known as over-the-counter market (OTC-traded derivatives). In addition, the OTC derivatives markets are decentralized and unregulated and the parties are not required to report transactions.

Derivatives are financial instruments whose value depends on, or is derived from the value of another asset such as a stock, a bond, a commodity or an index of stock prices. Financial derivatives are merely a contract between two or more parties which fluctuate in strong correlation with the underlying asset.

Financial derivatives are also defined as a financial contract whose value is based on, or derived from, a traditional security, an asset or a capital market index, with a value determined by fluctuations in the underlying asset.

Nevertheless, the term “financial derivatives” isn't formally defined by any standard-setting concept. Underlying asset can be represented by a commodity (oil, metals, grains), a financial instrument (shares, currencies, indices) or other values. Actually, the most common underlying assets include : stocks, bonds, commodities, currencies, interest rates and market indexes.

One of the major advantages of using financial derivatives is that professional investors sometimes purchase or sell derivatives to manage the risk associated with the underlying asset, in order to ensure against fluctuations in value, or to profit from periods of inactivity, instability or decline. However, it is important to mention that these techniques can be quite complicated and risky.

2. The role of derivatives in the subprime crisis

In a globalized financial economy, the subprime crisis that erupted in mid-2007 triggered dramatic consequences in all the fields of financial markets. In terms of financial derivatives analysis it is obvious that there are two sides to this coin. Many voices have condemned the use of financial derivatives and their indisputable contribution in triggering the subprime crisis. The dilemma is whether their contribution is a default projection with a sine qua non aim or a circumstantial ingenious method to manipulate the financial system. In the period preceding the subprime

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crisis, financial engineering was perceived as an effective lever who orchestrated massive mispricing of capital. Practically, financial derivatives are complex innovational instruments used to reduce the risk assumed by the investor. In general, financial derivatives are used as an instrument to hedge risk, but can also serve for speculative purposes. Actually, derivatives make it possible to hedge risks that otherwise would be not be possible to hedge. Simultaneous, most financial derivatives are characterized by high leverage.

Nevertheless, the recent past has shown that the highly speculative tone of this particular financial instruments has acquired intense connotations regarding the subprime mortgages bubble. In order to explain this phenomenon, is important to emphasize debtors profile which was a higher credit risk considering various characteristics such as certain foreclosures, income ratios, bankruptcies, very high amount of debt.

A justification with a more dramatic support is provided by the International Monetary Fund : “the fallout rapidly spread through an excessively leveraged financial system to curtail liquidity in the interbank market, to weaken capital adequacy and force the emergency resolution of major financial intermediaries, to deeply disrupt structured credit markets, and to prompt a repricing of risk across a broad range of instruments”.

Beyond any argument, in the pre crisis period, financial regulations were overly permissive and for this reason are responsible certain factors, such as government, regulators, investment banks, lending institutions, ratings agencies, lending officers, financial media channels.

3. An exhaustive theoretical approach

In the literature there is no standard definition of financial derivatives. This concept is in a permanent development and restructuring given the current financial and economic context. In order to provide an overview of the financial derivatives concept, it is important to introduce some enlightening definitions.

A derivative is a transaction that is designed to create price exposure, and thereby transfer risk, by having its value determined – or derived – from the value of an underlying commodity, security, index, rate or event. Unlike stocks, bonds and bank loans, derivatives generally do not involve the transfer of a title or principle, and thus can be thought of as creating pure price exposure, by linking their value to a notional amount or principle of the underlying item (Dodd, 2004).

According to International Monetary Fund (IMF) : “financial derivatives are financial instruments that are linked to a specific financial instrument or indicator or commodity, and through which specific financial risks can be traded in financial markets in their own right.”

A personal and more individualized definition of financial derivatives is provided by certain authors, such as Stulz. In his opinion, the construction of financial derivatives is based on the assumption of the absence of frictions. Consequently, an investor can implement an asset-buying-and-selling strategy that only requires an initial investment that ensures that the portfolio generates the same payoff as the derivative. This financial structure is known as generic “replicating portfolio.” In this case, the fundamental condition is that the value of the derivative must be the same as that of the hypothetical replicating portfolio, otherwise there would be a way to make a risk-free profit by buying the portfolio and selling the derivative (Stulz, 2005).

The use of these particular innovative financial products provide many advantages for investors. The main purpose of financial derivatives is to transfer risk from one investor to another, in order to provide insurance. In other words, derivatives improve overall performance of the economy.

A financial investor, whether institutional or individual who holds assets, is exposed to various risks that are generated mainly by financial assets price changes. Implicitly it is necessary to protect against them. Thus, the main benefit of derivatives is to minimize risk for one party while offering the potential for a high return at increased risk to another.

In another train of thoughts, access to information is a strength facilitated by the use of derivatives. In this respect, financial derivatives enable investors to trade on information that otherwise might be unapproachable expensive or inaccessible to exploit. Consequently, an important advantage is that derivatives can make underlying markets more efficient.

On the other hand, financial derivatives markets expand the idea of risk-taking activity relative to capital. Based on concerted action such as optimization and streamlining financial transactions and leverage of capital, derivatives can increase speculation just as facile as reducing the cost of hedging.

Technically, capital requirements function to provide both a buffer against the vicissitudes of the market and a governor on the tendency of market competition to drive participants out along the “capital market line” where they seek higher yields by taking on greater risks (Eatwell, 2001).

According to Dodd : “derivatives markets can provide new opportunities for destructive activities such as fraud and manipulation and they can facilitate unproductive activities such as outflanking prudential financial market regulations, manipulating accounting rules and evading or avoiding taxation”.

A metaphorical and critical analysis of the financial derivatives concept was revealed by Warren Buffet as follows: “The derivatives genie is now well out of the bottle, and these instruments will almost certainly multiply in variety and number until some event makes their toxicity clear. Central banks and governments have so far found no

effective way to control, or even monitor, the risks posed by these contracts.... derivatives are financial weapons of mass destruction, carrying dangers that, while now latent, are potentially lethal.”

4. Classification, purpose and trading strategies

Derivatives are classified broadly into the following main categories: forward contracts, futures contracts, swaps and options.

Derivatives are widely used in the financial market of about three decades and recorded a continuous development. The usefulness of these financial products gravitate around the idea of achieving certain targets. Thus, they are used to hedge risk, namely the operation of isolation and certain risk transfer (interest rate, foreign exchange, credit, operational, etc.). This activity is called hedging. They also can be used for arbitrage operations - exploitation imbalances between different markets (eg the foreign exchange market and the monetary market - interest). Another purpose is speculation in financial markets that confirm the forecasts of market developments.

Consequently, the derivatives market is characterized by three main categories of traders: hedgers, speculators and arbitrageurs.

The hedgers are investors who generally are characterized by their exposure to the underlying asset, using derivatives to neutralize potential risk in case of a financial loss due to the unfavourable evolution of the asset price.

Speculators are investors who try to anticipate the underlying asset price trend evolution and accordingly initiate a position in the derivatives market. In terms of strategies used by speculators, it can be noted that this is an investment with a high degree of risk with the purpose of achieving a significant profit, unlike investment strategies using risk-free assets (eg government bonds and treasury bills) or arbitrage strategies.

Arbitrageurs are investors who starts opposite positions in one or more financial markets in order to obtain a profit already known at the time of the transaction (profit without risk).

By the fact that capital markets are generating income excluding invested capital and the level of assumed financial risk, the arbitrage is an abnormal condition of the market or a state of non-equilibrium. According to financial arbitrage reasoning, two instruments that generate the same effect should have the same price.

In the context of a globalized economy, a financial investor, whether institutional or individual who holds assets is exposed to various risks that are generated mainly by price changes, which is the main reason that it is necessary to secure the investment.

In commercial law, a forward contract is an agreement between two parties whereby they agree to buy or sell a certain amount of underlying asset (a commodity, financial instrument government, one currency or other financial instrument) at a certain price, delivery at a specified future date and in certain preconditions. An obvious difference from futures contracts is the fact that these contracts are not standardized, they are customized contracts concluded between the two sides. Furthermore, the forward contract is the least sophisticated derivative products. In addition, forward contracts are not liquid. Called the agreement "to arrive" forward contract is the predecessor of the current futures contract.

To eliminate counterparty risk, a forward contract clause stipulating that the two exchange participants must provide a cash guarantee (usually a percentage of the assets value) to be held to maturity by a third party. In case of non-maturity contract, either party loses the guarantee in favor of the other. This guarantee is nothing but a measure to ensure the proper execution of the contract maturity.

Taking into account considerations of financial arbitrage, the forward price is:

$$F(0, T) = S_0 e^{rt}$$

In the previous formula, S_0 is the spot price of the asset or commodity, T signifies maturity of the contract and $F(0, T)$ concerns forward price.

If an asset generated income during the forward contract at the present value V_0 , the forward price is:

$$F(0, T) = (S_0 - V_0) e^{rT}$$

In terms of practical usefulness, it can be mentioned as an example that these forward contracts play a vital role in almost all electricity markets (Anderson, 2007) or the oil market (Manzano, 2005).

Futures contracts are derivatives traded exclusively on a regulated stock market. As a general standardized definition, futures contract is a commitment between two partners, a seller and a buyer, to sell or to buy a particular asset (currency, shares, other securities or commodities and securities catalog), at a price established at the time of the transaction, considering the fact that the completion of the contract will be completed at a future date known as date of maturity.

Using a futures contract, the seller agrees to sell and the buyer to buy assets from the contract at a future date (maturity), but at a price set at the time of the transaction. Actually, futures contract is a standardized forward contract.

Even if at the date of maturity the buyer is no longer interested in the asset, it can not cancel the forward contract commitment as it will void the warranty. Also, these issues are valid in the case that the seller does not want to sell or deliver due date of maturity. Basically the two contracting parties are bound by forward contract clauses. By standardizing all its terms and especially in that price is negotiated constantly between several participants, futures

contract, has the greater flexibility of use. Considering the fact that futures contract is standardized, it may be transmitted between multiple participants within successive transactions.

Is important to note that to open a position, either long (buy) or short (sell) or whether to buy or sell a futures contract, the investor must submit an initial margin to cover potential losses incurred. The initial margin is set taking into account the risk caused by the asset volatility and contract value. The difference between the spot market price and the futures market price is known as the base (basis). As the contract approaches maturity, size tends to be narrow base and maturity futures price equals the spot. If $F > S_t$ (base is negative) market is known as contango (market report), while if $F < S_t$ (base is positive) market is known as backwardation.

Generally, in practice there are two types of futures contracts traded, according to the underlying asset characteristics, namely: *financial futures* - futures contracts based on financial variables such as the following underlying assets : shares, indices, interest rates, indices price, exchange rates, gold prices and *commodities futures* – which are contracts based on underlying assets such as futures commodities : cereals, oil and derivatives, energy, coffee, cocoa, butter, sugar, cotton (Rotenstein, 2012).

The category of swap derivatives is itself a contract between two parties whereby contractors undertake to exchange payments. The most commonly used contract is that one party agrees to pay a fixed interest rate in return for an adjustable rate offered by the other party.

Swaps are based on a portfolio of forward contracts that allow participants or users to change between them at maturity favorable cash flows of both parties. Swaps exchange debts with a variable interest rate with debts with fixed interest rates in the same currency or other currencies. This type of contract is not used routinely. This particular category of financial derivatives is used for insurance purposes, especially in terms of currency and financial risks.

An option is a financial instrument that gives the holder the right but not the obligation, that in exchange for a premium, to trade a financial instrument or an underlying asset. A more elaborate definition emphasizes that option is a standardized financial derivative that represents the right to buy or sell an asset (underlying asset) at a specified price during a predetermined period (Rotenstein, 2012).

Forward or futures contract requires the holder the obligation to trade at maturity data at the price established in the contract. On the other hand, an option gives the buyer the right (not the obligation) to trade the underlying asset at maturity data at the price established. However, the option seller is obliged to trade asset if the option is initiated by the buyer.

Generally, we use two types of options: CALL, which implies the right to buy the underlying asset at a predetermined price and PUT, which implies the right to sell the underlying asset at a predetermined price. These options are completely different contracts which can not be perceived as opposite sides of the same transaction.

Options are used on financial markets for the following purposes:

- speculation;
- hedging
- financial arbitrage

Considering the following notation : S the price of the underlying asset and E the price which is specified in the contract, at the maturity date, the value of a CALL option will be equal to:

$$\max(S - E, 0)$$

The previous relation is called the *payoff function* and expresses the value of gross profit earned by the option holder. Net profit is obtained by subtracting from the gross profit, the premium paid by the buyer (Altăr, 2002).

On the other hand, using the same generic notation, it will be obtain the following payoff function in the case of the PUT option :

$$\max(E - S, 0)$$

5. Conclusions

This article examines the issue of financial derivatives as a product of a globalized worldwide economy, which is characterized by increasingly complex requirements. The architecture of capital markets has changed significantly in recent decades, particularly through the emergence and development of new financial products. Futures contracts, forward contracts, options and swaps are the most common categories of financial derivatives. Financial derivatives represent an innovative solution with significant growth potential, while having at the same time a key role in risk management. Financial derivatives allow investors to hedge or to absorb risks at minimum cost.

Financial derivatives concept determine, by its very structure, the impact of an amplifying effect of gains and losses. Consequently, derivatives trading is not suitable for all investors, because there is a very high chance of losing in short intervals of time amount of money that can exceed the initial deposit placed into the trading account.

The main reason of this issue is the influence of leverage that allows, through a small amount of money, access to the underlying assets of significantly greater value. In this respect it should be noted that all transactions involving derivatives are based on high risk and require solid knowledge of both financial derivatives market and the market where the underlying asset is traded.

The crystallization of financial derivatives market and their fulminant growth, raise certain concerns about the vulnerability of the financial sector and the overall economy. However, it is not necessarily a sine qua non condition that these instruments to degenerate into a financial system fissure or even worse into a global financial crisis. Beyond their innovative and relatively complex structure, derivatives constitute an undeniable progress of financial markets.

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