

SOME LESS DESIRABLE EFFECTS REGARDING THE CURRENT USE OF DERIVATIVES

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Abstract: *Derivative financial instrument were created with the purpose of allocating risks in an optimal manner and for promoting market efficiency, but their practical development poses a number of problems: derivatives have fuelled the volatility of the underlying assets, being regularly individualized as speculative instruments. The ambivalence of derivatives raises the thorny question of the control of their use. The 2007 financial crisis placed at the centre of attention the importance of the OTC markets of compensated and uncompensated derivative products and their economic value for companies and investors for the control of the financing risk and the risk of investments in financial markets.*

Keywords: *derivative instruments, speculation, systemic risk, financial crisis*

INTRODUCTION

Derivative instruments allow for determining in advance the purchasing or selling price of the underlying asset. They are essentially used to cover risks, however, since they allow for taking high-indebtedness positions, they encourage speculations.

For the classical economists, speculators have a stabilizing effect on markets, acting as buyers of securities when the market prices are low and as sellers when the market prices are high.

This vision requires that brokers adopt medium or long-term strategies, until asset prices return to their basic value.

Generally, the effect induced by introducing new financial products is favourable only if it promotes the informed investors' participation.

Moreover, even if the opening of a futures market has a stabilising potential (at equilibrium, the price is less volatile), the learning effects related to the difficulty to anticipate the behaviour of other actors make the equilibrium "difficult" or even impossible to achieve.

Eventually, the destabilising effect can be related to the fact that the derivatives market encourages brokers to choose riskier strategies, which lead to the increase in the social welfare, but also lead to a volatility increase.

MATERIALS AND METHODS

As a result of the 2007-2010 financial crisis, the criticism of derivatives was focused on the wrong perception of risk. Actually, the assessment of derivative instruments cannot be reduced to a purely mathematical discipline. Moreover, in fact, the simplest arbitration relationships are not always verified and the assessment of complex products is very subjective.

The methods, regardless of their sophistication, due to their nature, integrate operational risk insufficiently. The methods of assessing derivative products certainly allow for a better management of the fluctuation of asset prices, by turning uncertainty into a risky situation that will be avoided.

But, at the same time, this process generates new risks, qualified as second-degree risks, which are, in their turn, inherently unpredictable.

Another source of concern related to the derivatives market is the concentration of players than can cause a chain failure. In theory, the main advantage of derivatives is that they allow for a better distribution of risks. In order to avoid the cascading effects resulting

from the failure of a big operator, a solution would be to encourage the migration of off-market contracts towards organized exchange markets.

The advantages and disadvantages of each market are well known. Regulated markets can centralize orders with the purpose of limiting the risk of default. In contrast, on the OTC markets, generally, there is no clearing house that should intervene between buyers and sellers, and thus the counterparty risk emerges; on the other hand, contracts can be customized. Consequently, a migration of derivatives on the organized markets, at least in what the standard products are concerned, reduces risks and improves liquidity.

In the end, in order to limit speculations, it is increasingly a matter of limitation – or even prohibition – of the exposed strategies, especially in the case of credit default swaps (CDS) or agricultural derivative instruments.

RESEARCH RESULTS

Derivative financial instruments are referred to as such because their value on the market derives from the value of other assets called “underlying” assets. For example, the underlying asset can be a share, a bond, but can also be a monetary, financial and real variable (exchange rate, interest rate, stock market indices, climatic indices, goods or other raw material with a standardized quality) [9].

The economic performance of the current forms of derivative financial instruments can be connected to the solvency of a certain entity or to meteorological information related to a certain region.

Derivative financial instruments are a manner of determining, through various mechanisms, a future price for such assets.

They provide their holder with protection against the negative financial impact of a future commercial or financial operation at a price, or more generally, under terms the holder cannot control.

A derivative, in its general meaning, fulfils the role of an insurance policy, based on the principle of determining a future, fixed or optional price and whose characteristic is to be negotiated on a financial market.

The most remarkable classes of derivative financial instruments are options, futures contracts and swaps.

An option gives its holder the right – not the obligation – to buy (the call option) or to sell (the put option) a certain quantity of financial or real assets, at a price set in advance, called exercise price. This right can be exercised in a predetermined period of time (in the case of the American option) or at a certain date (in the case of the European option). If a position is exercised, it may be liquidated by delivery or liquidation-cash. If the market takes a turn other than that favourable to buyers, the latter may let options expire.

A futures contract is a standardized contract that creates for the contracting parties the obligation to buy and sell, respectively, a certain underlying asset at the maturity date and at a price agreed upon at the moment when the transaction is concluded [6]. However, the position held can be closed in the market by compensation before the maturity date.

The swap contract is a closed-end derivative financial instrument, by which participants exchange the risk and the advantages associated to a variable or fixed payment contractual obligation, with the risk and advantages associated to fixed or variable payment contractual obligations. The participants are only legal entities engaged in contracts for the issue of transferable financial instruments with a different rating, commercial contracts, payments in the national currency or other currencies, as well as in arbitration, hedging and speculation activities. Swap contracts are not concluded between the partners of main sale/purchase economic contracts, but separately, between them and a specialised broker

who undertakes the price variation risk separately. Due to the fact that such contracts are not standardized, they cannot be traded on an organized and regulated market, but are negotiated individually (on the OTC market), which gives the participants the possibility to fix conditions and flexible clauses of the swap contracts.

Derivative products were initially designed to cover the risk associated with the change in the base price (hedging).

Hedging implies taking a position on the futures market opposed to the position held on the physical market with the purpose of temporarily replacing a transaction that is to be made on the cash market, as a protection against the risk that the price will have an unfavourable evolution.

It is a manner of protection against the increase in the production costs or the decrease of the selling prices.

The long hedge strategy is applied when the purpose is the insurance against the increase in the price of the products or the increase in the exchange rate of the currency to be bought [7]. By buying futures contracts, an insurance is made against the increase in the price of the product to be bought or of the exchange rate if the currency to be paid. When the amount is paid in the foreign currency or the product is bought, the futures contracts will be liquidated by sale. The losses from the price fluctuations will be covered by the profit made in the futures market.

The short hedge strategy is applied when the purpose is the insurance against the decrease in the price of the products to be sold or against the depreciation of the currency to be collected. For this purpose, futures contracts will be sold in advance, and when the actual sale of the products or the collection of the amount in the foreign currency takes place, the contracts sold will be bought [7]. As with the hedging long, any physical loss recorded will be offset by the gain obtained in the futures market.

Thus, derivatives enable the actors of the real economy (agricultural producers, raw material processors, importers, exporters) to carry out a risky activity for which there is no other insurance mechanism, and are consequently favourable to the economic growth.

Nevertheless, this protection against the price risk is not unlimited.

The users of derivatives have to face, indeed, the so-called market structure. As is the case with any other market, the derivatives market requires the presence of buyers and sellers so that the transaction may take place.

If, for structural reasons (there are more wheat producers in the market than potential buyers, for example) or conjectural reasons (due to the meteorological conditions, crops will be abundant and few wheat users anticipate that prices will grow) the term supply exceeds the demand, then the price of these contracts (which eventually defines the wheat futures price) will tend to decrease, which will obviously be unfavourable for the producer.

Consequently, the users of derivatives cannot avoid the price risk completely. If prices decrease, the producer will partially bear the loss, but will also ensure a threshold of the selling price. Symmetrically, if raw material prices grow, the end user will partially bear this increase and protects himself only against the risk of a price higher than the one defined in the futures contract (ensures a level of the purchasing price in the case of raw material price increase).

According to this principle, swaps and options have the same qualities as the futures contracts, but the protection mechanisms they use will be different.

More costly, options provide especially more flexibility than a swap or a futures contract. Due to the fact that they give the right, but not the obligation to get a fixed price in advance, they give their users the possibility to take advantage of a favourable evolution on the market.

A call option allows for ensuring a maximum purchase price, not a minimum price. On the other hand, a put option allows the option buyer to set a minimum selling price, not a maximum price.

Therefore, under normal circumstances, the derivative instrument market have an essential function within the economic system: to perform the risk transfer.

This can be done in two ways:

- either by confronting the interests of the economic agents who wish to protect themselves against a similar but opposed risk (an importer who wishes to protect itself against the appreciation of the currency, an exporter who meanwhile wishes to protect itself against a decrease);

- or by the understanding between the agents who wish to avoid the risks faced by other agents, speculators, whose role (economic function) is to undertake, for a compensation, such risks.

Realistically speaking, the liquidity of the derivatives market, which is an essential condition for its smooth operation, requires the presence of speculators in order to cope with the so-called hedging asymmetry. The positions of the agents in the “real” sphere (short for the producer, long for the end user) is rarely balanced indeed, and speculators allow for the offset of such imbalance.

The informational function is the second role undertaken by derivative instruments. The purpose of the dollar call option, for example, is to protect its holder against the dollar appreciation risk. According to the demand and supply law, it is clear that the increase in the option price (premium), while all the other variables remain unchanged, translates the fact that the demand for option is strong. Consequently, based on this high price, it can be inferred, when it can be noticed, (more specifically, when they are traded on an organized market unlike the OTC market) that the market, taken into account as a whole, anticipates at the maturity of the option, an increased risk, i.e. a stronger dollar, for which it provides protection.

According to the new option pricing models, an increase in the option premium means an increase in the anticipated volatility of the underlying asset. Regardless of the price or volatility level, the private information of each agent (grounded or not) can be found in the price of the considered option [11].

Although, at first glance, derivatives are only indispensable instruments in the management of harmless financial risks, they are dangerous for at least two reasons.

First of all, while derivative financial instruments are not a prerequisite for the existence of speculation, they enhance its effects; (speculation exists, but is amplified by derivatives). In their absence, or more generally, in the absence of the term pricing mechanisms, a speculator could only buy an asset and hope to resell it at a higher price at a later date.

Derivative instruments enable the same speculator to apply very offensive speculative strategies. Proof in this respect is represented by the current high prices on the raw material market which are partly due to the use of derivative products by speculators. The number of total futures and options contracts traded at global level on commodity exchanges grew by more than three times between 2001 and 2007, while the number of those contracts holding on agricultural products more than four times.

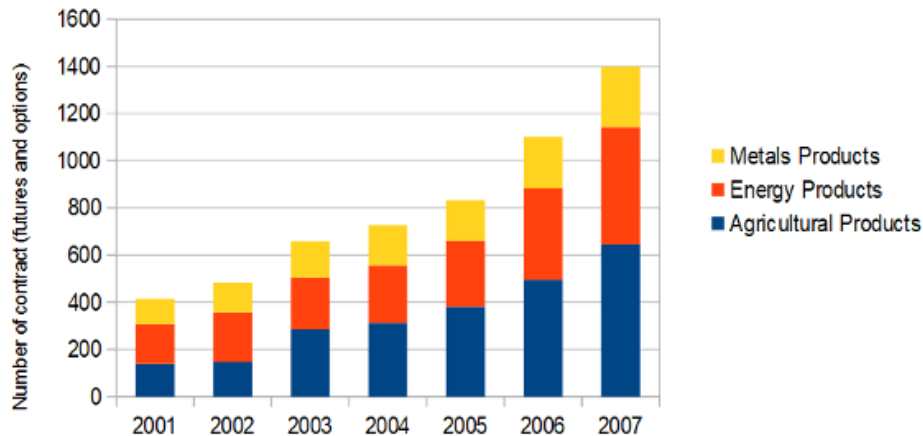


Figure 1. The number of total futures and options contracts traded at global level on commodity exchanges between 2001 and 2007

Source: Santana-Boado, Leonela, Gross, A., 2009

The deregulation of the financial sector until 2008 encouraged the development of complex derivative financial instruments, including materials index funds and the institutional demand for these products grew significantly.

This can be attributed to the gradual narrowing of the other markets: the dotcom bubble eventually ended by exploding in 2001, the stock exchange collapsed shortly after that and the USA real market recorded a disaster in August 2007.

Each time these bubbles burst, big institutional investors moved on more traditional and more stable markets, negatively correlated with shares and bonds, in order to protect themselves against overestimation (grow).

Materials index funds enabled investors to diversify their portfolios through various term markets, without investing directly in each of them. A materials index fund is a weighted average of the term prices of several selected raw materials. It is representative for the raw material asset class. Investors can choose to obtain a passive exposure of these index funds on goods, by an exchange agreement on the overall performance. The advantages of the passive exposure of materials index funds include a negative correlation to other classes of assets, such as shares and bonds, and protection against inflation.

Index speculators were not interested in buying underlying assets or in the short-term variation (volatility) of the futures contract prices. Their strategy was to “take a long position”, by purchasing futures contracts constantly purchased at a smaller price in order to resell them at a higher price before their maturity date, and to reinvest in futures contracts with subsequent maturities.

Financial analysts took part in this process by making forecasts concerning the additional increase in prices. Real market actors were encouraged to increase agricultural reserves in anticipation of future incomes, resulting in higher agricultural prices following the reduction of the supply according to the traditional speculative approach.

“Stocks of key food commodities are 20% higher in 2009/10 compared to 2007/08; yet the nominal food price index averaged 23% higher in December 2009 compared to a year ago” [1]. Also, according to an independent estimation, 59.1% of the 2007 national soy crop was in fact bought through speculative positions, and the figures exceed 83.6% for wheat.

Consequently, the changes in the prices of food products do not necessarily reflect the movements occurred in the market, in the supply and/or in the demand, but they were determined to a great extent by speculations, which partly exceeded the liquidity needs of the raw material markets in order to perform user transactions with such raw materials.

Furthermore, “between the second half of 2007 and the first half of 2008 production of petroleum increased from 85.8 million barrels per day (mb/d) to 86.8 mb/d. Consumption fell from 86.5 mb/d to 86.3 mb/d. Prices should have fallen. In December 2007, crude oil averaged US\$ 90/barrel while in June 2008 it averaged US\$ 132/barrel, almost 50% up.”[1]

Hence, it is not the constant increase of the demand for commodities that determines the price level, it is the volatility peaks that determine its reduction.

Although initially big farms (such as those in the United States of America) took advantage of the price increase, in the long term, they were affected by their volatility and by the higher borrowing costs, bearing the difference between the prices in the stock market and those in the real market.

Farmers in developing countries erroneously interpreted price volatility, borrowing and investing to increase their production in the price peak periods, being exposed to the risk of total loss in the case of their decrease, which led to bankruptcy and abandonment of the production by many small food producers.

Although these techniques are present in all financial markets, their effects in the commodities markets and especially in the food product markets are among the most destabilizing. Necessary during the normal operation in order to ensure the liquidity of the market, and having, at the same time, a destabilizing potential, speculations had a particularly ambiguous role for a long time.

While it is obvious that speculation can be both stabilizing and destabilizing at the same time, operational control solutions need to be found. Market regulation authorities must therefore engage in a subtle game: to encourage the development of financial commodity markets sufficiently liquid to meet the expectations of the manufacturers and the consumers at the same time, but also to control, at the same time, the expansion of speculations. Although it is desirable, this aspect is particularly complex, Commodity Futures Trading Commission - CFTC, responsible for regulating US commodity markets recognized, in 2011, the need to refine its strategy in order to apply a new framework policy concerning the speculative positions on energy products, metals and food products. Therefore, it is understandable that a better surveillance of speculative practices on these markets is not intrinsically concerned with a better control of derivatives, but with allowing for a distinction of those who use them for hedging techniques, from those who use them for purely speculative purposes.

Secondly, derivatives can, in contrast with the purpose for which they were initially created, shade out the dissemination of information related to markets that promotes the concentration of risks in the financial area. The 2008 financial crisis represents, through the credit default swaps (CDS), a perfect example.

A CDS is a credit derivative contract whereby the protection buyer pays the protection seller regular premiums throughout the contract duration in exchange for a compensation if an event predefined by the credit in relation to a third institution occurs. The value of this premium depends especially on the assessed default probability and the potential losses.

By buying a derivative credit instrument, the creditor gains the possibility to transfer the credit risk to a third party (a protection seller) [5]. The creditor remains in the position of a contracting party together with the debtor. CDS are interesting especially for banks, due to the fact that the credit risk of the reference entity can be fully or partially transferred without modifying the relationship between the debtor and the bank.

A CDS might appear in full compliance with the traditional and harmless insurance. Two elements highlight that things are not as they seem to be.

First of all, a CDS holder is not required to have a claim on the issuer of the credit title (a bond or a CDO - collateralized debt obligations) that can undergo a bankruptcy risk, for which the CDS guarantees that in case of default, it can only be a speculator. The CDS becomes a means, as it was the case during the debt crisis in Greece, which enables the speculation related to the risk of default by a debtor. If such risk grows, the CDS price grows too, penalising the investors that would want to buy in order to protect themselves against the debtor's bankruptcy. The speculation by means of the CDS can worsen the debt crisis, due to the fact that the increasing CDS price is a signal of the deterioration of the debtor's quality.

CDS are traded, secondly, on OTC markets that lack transparency. Unlike stock markets, these markets are not regulated by an authority and allow for direct transactions between the protagonists. They have proved to be very opaque and, ultimately, even dangerous for the world economy. For example, in the eve of the Lehman Brothers collapse, it was particularly difficult to establish who compensates whom and with what amount, because the volume of CDS issued between 2000 and 2008 had exploded („from almost nothing in 2000, the notional value of default swaps and related products had mushroomed to \$55 trillion in 2008“[2]).

Far from promoting the actual risk transfer as it should have, the CDS, due to the structure of the market on which they are traded (on the OTC market, 89% of the derivatives are negotiated) have favoured the systemic risk. This came to the forefront with „the accelerated growth in credit derivatives to about US\$60 trillion at its peak in 2007” [8].

Excessive liabilities from a small segment of credit default swaps (CDS) on residential mortgage-backed securities for key institutions such as American Insurance Group (AIG) threatened to destabilize the financial system. „By end-June 2008, AIG had taken on \$446 billion in notional credit risk exposure as a seller of credit risk protection via credit default swaps (CDS). AIG's unhedged sales of nearly half a trillion dollars of insurance represented a significant concentration of credit risk in a market participant that ultimately did not have the necessary loss absorption capacity.“ [3]

The bankruptcy of Lehman Brothers and the rescue of the AIG insurance company (to save AIG from imminent collapse, the Federal Reserve stepped in with an \$85 billion rescue package [2]) have clearly proved that the financial network developed through derivative financial instruments is, due to its amplifying effects, able to cause the collapse of the global financial markets.

The success of risk sharing at a system level is crucially related to the numbers of protection sellers or those who have a considerable position in derivatives liabilities and the structural interconnections involved in the provision of guarantees. Indeed, the key structural aspect of the networks underpinning financial derivatives has been summarized in a 2009 Fitch survey: “dependence on a limited number of counterparties looks to be a permanent feature of the market; this is underscored by the fact that the top 12 counterparties comprised 78 percent of total exposure in terms of the number of times cited, up from the 67 percent reported last year. The top five institutions that provided volume figures accounted for 95 percent of total notional amount bought and sold. This concentration is a reflection of the dominant role of banks and dealers as counterparties, particularly after the collapse of a limited number of financial institutions who were important intermediaries in this market.” [8]

In order to avoid this nightmarish scenario (the emergence of a potential systemic risk that would contaminate the international finance), world financial authorities, within the G20 Pittsburgh summit held in September 2009, have stated to undertake reforms

aimed at increasing transparency and reducing counterparty risk in the OTC derivatives market.

In Europe, the commitments made by G20 members have been transposed into the European Market Infrastructure Regulation no. 648/2012 known as EMIR, which imposes new requirements for different active entities in the derivatives market: financial and non-financial counterparties as well as central counterparties, and also introduces new actors: central trading registries, with a role in registering all derivative contracts concluded between counterparties.

The EMIR is based on the following principles [14]:

- The obligation that all OTC derivative contracts that are considered sufficiently liquid and standardized by the European Securities and Markets Authority (ESMA) to be compensated by a central counterparty. Thus, counterparty risk is fully transferred to central counterparties.
- Applying of risk mitigation techniques against any OTC derivative that does not compensate.
- Mandatory reference to all derivatives (both OTC traded and traded on a regulated market - ETD) to a trade repository (TR).
- An EU-wide legal framework concerning the role of central counterparties.

CONCLUSIONS

Much like a knife that can be as dangerous as it is useful, derivatives are a reality on complex financial markets. They allow both for the implementation of the risk hedging operations, for which there are no insurance policies (speculative risks), as well as, on a large scale, for condemnable speculative strategies, either due to the underlying asset they are based on (food agricultural products especially) or due to the significant risk they transfer onto the real economy.

It is unreasonable to consider derivative products exclusively from the point of view of speculation and similarly, it would be erroneous to believe that their control, even if it is intrinsically, is sufficient to correct the deficiencies of modern finance.

The reform of the financial sector, timidly initiated mainly under the aegis of G20, certainly requires strong political will and cannot be achieved through simple measures.

Financial crises emerged together with the existence of financial markets and the utmost prudence is required in relation to the capacity of the regulatory authority to prevent their reoccurrence. Financial engineering, which initially originated the most complex and risky securitization techniques, is always ready to avoid stricter regulation measures.

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