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COMMODITY EXCHANGES AND FUTURES TRADING

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A *commodity exchange*[1] is a particular exchange (or market) in which commodities and derivatives products are traded. The mechanics behind an exchange are basically the same as the ones behind a public marketplace, where commodities are contracted for purchase or sale at an agreed price and for delivery at a specific date. The objects of trade are mainly agricultural products (like wheat, sugar, maize, cocoa, coffee, rice, etc.) and other raw materials (mainly metals), and the places of exchange are commodity markets. These purchases and sales are made under the terms and conditions of a particular contract. A variety of contracts can be chosen, among which futures contracts, forwards contracts, and options[2], which all belong to the financial category of *derivatives instruments*[3].

Commodity exchanges usually trade futures contracts on commodities. A future contract is an agreement which provides for delivery of a specified amount of a particular underlying commodity, on a fixed future date, at a price agreed today. So, a future contract is based on two crucial dates: "today" is the date of the agreement on the price of the commodity. This predetermined price is known as the settlement price. The "future date" is the moment in which the payment and the delivery occur. The future date on which the contract is executed is known as the final settlement date or the delivery date.

[1] See glossary for a definition of "exchange"
[2] See glossary for definitions of "futures", "forwards", "options"
[3] See glossary for a definition of "derivatives"

Financial markets are, by nature, extremely volatile; therefore traders' attitude towards risk is very relevant. The primary purpose of futures markets is to enable traders/investors to either reduce their exposure to specific financial risks (generally risk related to price uncertainty) transferring these risks to other parties who are willing to bear them at lower cost, known as *hedging*, or increase their exposure to certain specified risks in the hope that they will earn returns more than adequate to compensate them for bearing these added risks, known as *speculation*. Therefore, the possible positions that a trader can cover on a futures market can be classified in two categories, according to his attitude towards risk:

1. *Hedgers* (risk-averse traders) use futures markets to reduce or eliminate the risk associated with price of an asset. For example, wheat farmers may wish to sell their harvest at a future date to eliminate the risk of a change in prices by that date.

2. *Speculators* (risk-lover traders) use futures contracts to get extra leverage in betting on future movements in the price of an asset. They can increase both the potential gains and potential losses by usage of derivatives in a speculative venture.

Futures contracts have a peculiar characteristic that basically distinguishes a futures market from a market in which actual commodities are bought and sold: they involve no immediate transfer of ownership of the commodity. In other words, one can buy and sell commodities in a futures market regardless of whether or not one owns the particular commodity involved. In fact, it is relatively rare for the futures contract to be held to maturity and for the underlying commodity to be delivered: usually investors/traders buy and sell the contract without wishing to receive/deliver the underlying good. The aim of this kind of behavior is to earn money, by betting on the increase/decrease of the price of the commodity in the future.

Futures markets, where futures contracts are traded, are classified amongst the most liquid markets[4]. In order to facilitate the creation of liquid markets, futures contracts are highly standardized. This means that most of the features of the underlying asset are set according to a standard which is equal for all the contracts, in order to have feasible exchange trading.[5]

Because of the liquidity of the futures markets - which is facilitated by the standardization and the speed and safety of transactions - it often leads the cash market[6], and is used as proxy for the market as a whole. Futures markets are preferred to cash markets by many investors, as they are often more liquid and the purchase/sale is very quick. However, although derivatives markets are often more liquid than the underlying cash market under normal circumstances, liquidity in derivatives markets is more easily lost at times of crisis, and therefore liquidity can not be guaranteed.

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[4] See glossary for a definition of "liquid market"

[5] Among these common features we have: contract size, fixed maturity and limited number of settlement dates, a limited risk for both seller and buyer (a particular mechanism, the clearing house –see glossary for a definition-, is used in order to control that the credit risk will rest within a determined range of oscillation).

[6] See glossary for a definition of "cash market"

The futures markets (and derivatives markets in general) perform a number of economic functions:

1. They help in transferring risks from risk adverse people to risk oriented people
2. They help in the discovery of future as well as current prices
3. They catalyze entrepreneurial activity
4. They increase the volume traded in markets because of participation of risk adverse people in greater numbers
5. They increase savings and investment in the long run.

Responsibility for higher prices and price volatility

An efficient futures market seeks to create an efficient forecast of price, which takes into account all the price-sensitive information about the commodity that is available at a particular point of time. However, futures markets are often seen as a major channel of speculation. Since the creation of futures markets, the problem of the increase of prices, in particular in the agricultural commodities and food, has been frequently read as a consequence of the speculation on these commodity exchanges.

1.1 Speculation on futures markets over the history

History has recorded several cases of prohibition of futures markets. These markets were banned basically because they were considered as the principal cause of the increase of prices on the market for the presence of speculators inside them.

The two most relevant episodes occurred in US (the prohibition of the Chicago onion futures market in 1958) and in Germany (the prohibition and rehabilitation of the Berlin wheat futures market in 1897-1900). The reason at the base of the decision was the same in both situations: the menace of price fluctuations caused by the speculative activity on the commodity exchanges.

The prohibition of the Chicago onion futures market, 1958

After extensive testimony and debate, the United States Congress in the fall of 1958 passed Public Law 85–839, otherwise known as the Onions Futures Act.17. The intent of the Senate Committee on Agriculture and Forestry was clear: given ‘‘that speculative activity in the futures markets causes such severe and unwarranted fluctuations in the price of cash onions […] complete prohibition of onion futures trading in order to assure the orderly flow of onions in interstate commerce’’ was enacted (United States Congress, 1958, p. 1). This law is significant in that it marks the first and only time in the history of the United States that futures trading in any commodity was banned.

The prohibition and rehabilitation of the Berlin wheat futures market, 1897–1900

In the wake of a disastrous harvest in 1891, German grain consumers suffered an increase in both the level and volatility of prices. As a reaction, public agitations against speculative ventures on the Bourse took frequently place at the time.

An Imperial Commission was established late in the year to investigate the workings and effects of the various mercantile, produce, and stock exchanges. Debates were closed in November, 1893, and a bill based on the Commission's Report appeared in the Reichstag in December, 1895 and was passed in 1896. The Exchange Act of 1896 treated the Berlin Produce Exchange in particularly severe fashion. From January 1, 1897, the Produce Exchange was forced to incorporate representatives of agricultural and milling interests into its executive committees, the publication of contract future and spot prices was prohibited, and dealing in grain futures was banned outright.

The Act succeeded in eliminating the speculative transactions, but on the other hand caused disastrous consequences. In fact Berlin, from one of the most influential markets of Europe, dropped to the rank of small provincial market. Moreover it had seemingly failed to accomplish its major benefit, the stabilization of commodity prices. In light of these negative effects and with the change of political composition in the Reich, the Exchange Act was rescinded early in 1900. In April of that year, the Berlin futures market in grain was reopened.

1.2 The impact of futures contracts on the underlying commodity price: two schools of thought emerge from economic literature

The impact of derivatives trading on the volatility of prices of the underlying asset is a controversial issue among the financial researchers and market regulators. In particular, we are interested on the impact of the introduction of futures contracts. The economic and financial literature on the issue is divided in two main schools of thought.

On the one hand, a group of studies report a decrease (or no change) in volatility in the cash market following the introduction of futures [eg. Edwards (1988b); Robinson (1994); Jacks (2006)]. The argument pointed out is that the introduction of futures contracts has led to more complete markets, enhancing information flows and thereby improving investment choices facing investors. Moreover futures trading may bring more private information to the market and allow for a quicker dissemination of information. In fact, futures market, as observed from the cross-country experience of active commodity futures markets, helps in efficient price discovery of the respective commodities and does not impair the long-run equilibrium price of commodities.

One of the most authoritative experts on futures markets declares that ''the perfect futures market [is] defined as one in which the market price would constitute at all times the best estimate that could be made, from currently available information, of what the price would be at the delivery date of the futures contracts.'' Consequently, realized ''futures prices are reliably anticipatory'' as ''they represent close approximations to the best possible current appraisals of prospects for the future'' (Working, 1962, pp. 446–447).

As far as speculators are concerned, this school of thought argues that they play a role in providing liquidity to the markets and may sometimes benefit from price movements, but do not have a systematic causal influence on prices. According to this branch of researchers, in fact, though at times high price volatility can be caused by speculation, it quickly reverts to long-run equilibrium price, as information flows in.

On the other hand, some studies report an increase in volatility following the introduction of futures [eg. Antoniou and Holmes (1995); Damodaran (1990)][7]. According to this second stream, the existence of speculators in futures markets may produce destabilizing forces, which leads to the creation of speculative bubbles. When this situation occurs, price behavior of a commodity in the futures market might show some aberrations reacting to the element of speculation.

The prevailing stream, according to the number of studies supporting the thesis present in the literature, seems to be the first one.

1.3 Recent evidence on speculation in futures market

The current situation of commodity markets

During the last few years, the world has faced a big crisis in commodity markets. The situation is even worse if we focus our attention only on food commodity markets. The problem of hunger and food accessibility has widened recently, due to the sharp increase of the prices of agricultural products. A recent report from the Institute for Agriculture and Trade Policy depicts a problematic situation: "due to high prices, the total developing country food import bill rose from about $191 billion in 2006 to $254 billion in 2007. Today, developing countries are consuming less food. About 43 percent of more than 27,000 people polled in a recent 26-nation survey said that they had cut back food consumption as a result of higher prices. The number of those undernourished and food insecure in the world has increased along with prices. Over the last year, riots broke out over food prices, lack of available and affordable food, and insufficient food aid."[8] As shown in the following table, all agricultural commodities have faced a sharp increase in prices. In particular, the most critical commodity is wheat, which recorded an increase higher than 300%, with respect to 2003 prices.

[7] Source of information on the related literature: McKenzie, Brailsford, Faff (2000)

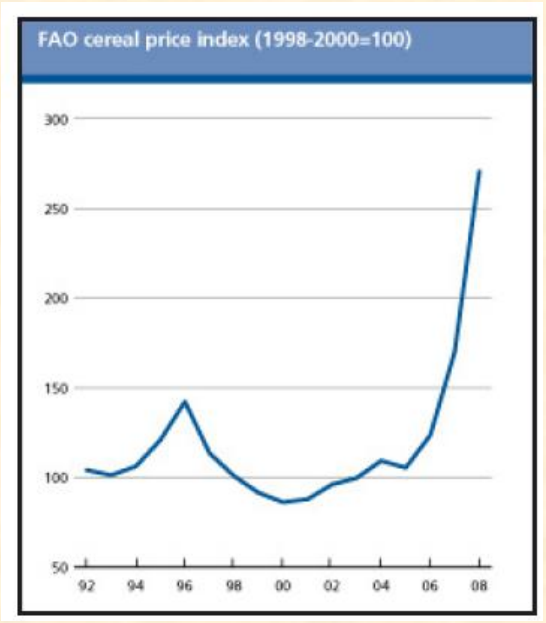
[8] Commodities Market Speculation: The Risk to Food Security and Agriculture, Institute for Agriculture and Trade Policy, 2008

Commodity Futures Price Increases March 2003-March 2008	
Agricultural	Cocoa +34% Coffee +167% Corn +134% Cotton +40% Soybean Oil +199% Soybeans +143% Sugar +69% Wheat +314% Wheat KC +276%

Source: U.S. Senate Testimony

The Agribusiness Accountability Initiative (AAI) stated that "massive commodity market speculation […] has pushed the prices of wheat, maize, rice and other basic foods out of the reach of hundreds of millions of people around the world." [9] AAI called on UN member governments to stabilize commodity prices and manage supply.

The United Nations Food and Agricultural Organization (FAO) estimates that in 2007, 75 million people were added to the 850 million already defined as under-nourished and food insecure. The following graph shows how cereal prices have rocketed in the last few years. Over a span of years the prices have more than doubled, and the trend has not reverted yet.



Source: Food Agriculture Organization

[9] *Time to act on food price speculation*, Agribusiness Accountability Initiative, April 21, 2008

The responsibility of commodity futures markets

Even if a general consensus seems not to have been reached yet, most of the analysts agree on the theoretical useful properties of futures markets. An efficient futures market seeks to create an efficient forecast of price, and helps traders to lower the risk associated with price uncertainty and volatility. Since 19th century, futures markets have been used by buyers and sellers of commodities to protect themselves against short-term price volatility. This practice, which goes under the name of "commercial speculation" (or hedging, as explained before), was introduced as a form of price insurance. Buyers protected themselves against sudden price increases, sellers against sudden price falls. This type of speculation plays a positive role inside markets. Nevertheless, the present situation does not mirror these good qualities of futures markets. The entire world is experiencing a too high volatility of food prices. Commodity prices have sharply increased from 2006 to July 2008, and they have not decreased to normality levels today, yet. Analysts continue to research the reasons at the base of high prices. One explanation has been found in exploring the functioning of food commodities futures markets. Many institutions involved in the study of food security, like FAO and the World Bank, are studying speculation as a factor in the food price crisis. This is classified as "non-commercial speculation", as its aim is not to protect traders against risk, but on the contrary to expose them to risk. In fact, speculators in futures markets seek for benefits coming from a bet on prices to go up or to go down. They are not interested in the underlying commodity itself, but just on the margins they can earn in betting on the prices future trend. Nonetheless, non-commercial speculation has also a positive function: it provides capital to enable the ongoing function of the market. It is a sort of investment on futures markets. Today's problem is that speculation has become excessive relative to the value of the commodities traded. That's why speculation seems to have a big responsibility for the raise of food prices. In this direction the US Senate has recently produced a report[10], which proves the presence of negative speculation on the Chicago wheat futures market.

In this context of extreme commodities price volatility, there is the need of a regulatory intervention of governments around the world. The UN Conference on Trade and Development has recently called for "stricter regulatory measures" in order to contain speculation on commodity markets.[11] A more efficient regulation is an important step towards price stability, which is a basic instrument to boost economic growth in most developing countries. Failure to regulate commodity derivatives adequately has not only contributed to huge increases in food import bills and food insecurity, but also to making futures and options contracts unavailable or too expensive for many farmers and some agribusinesses to use to manage price risk.[12]

Speculation on the U.S. futures markets

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[10] *Excessive Speculation in the Wheat Market*, (2009), Committee on Homeland Security and Government Affairs

[11] *Trade and Development Report*, 2008, UN Conference on Trade and Development

[12] Sally Schuff, *Ag futures in spotlight*, Feedstuffs, July 14, 2008.

In the U.S., futures contracts were useful and affordable as long as futures prices and cash market prices converged as the date for the contract's execution approached. Futures prices helped commodities traders to set a benchmark price in the cash market. Since 2006 prices have become more volatile and convergence less predictable; as a consequence, the futures market has lost its price discovery and risk management functions for many market participants. Non-commercial commodities speculation was a factor, though not the only one, that impeded price convergence and induced extreme market volatility.

The U.S. Senate has paid a particular attention to wheat futures market. In June 2009 a year-long probe by a bipartisan Senate committee has been published. The report analyses the last-few-years situation on wheat futures market, to find out the role played by speculation in the sharp increase of wheat price. Sen. Carl Levin, chairman of the Senate Permanent Subcommittee on Investigations which prepared the report, said: "The bottom line is that excessive speculation in commodity indexes has created losers throughout the wheat industry, from wheat farmers to grain elevators, grain merchants, grain processors, and grain users like bakeries and cereal companies. Those groups can't manage their price risks through hedging, and are socked with unwarranted costs from higher margin calls and failed hedges. When those costs are passed onto consumers, the result is higher food prices."[13] In other words, commodity index traders were one of the major causes of "unwarranted changes" – here, increases – in the price of wheat futures contracts relative to the price of wheat in the cash market. The resulting unusual, persistent, and large disparities between wheat futures and cash prices impaired the ability of participants in the grain market to use futures market to price their crops and hedge their price risks over time. Accordingly, the report finds that the activities of commodity index traders, in the aggregate, constituted "excessive speculation" in the wheat market. The report concludes that "excessive investment in wheat by index funds drove up futures prices, disrupted convergence between futures and cash prices and increased costs for farmers, the grain industry and consumers".[14] The problem of lack of regulation has been underlined has fundamental. To remedy the problem of speculation, the report recommends that the Commodity Futures Trading Commission apply the current regulation and prescribes appropriate changes where needed.[15]

2 Commodity futures trading in India

The volume of the commodity futures market in India has sharply increased during the last few years. Since 2002, the commodities futures market has experienced an unprecedented boom in terms of the number of modern exchanges, number of commodities allowed for derivatives trading as well as the

[13] C. Scott-Thomas, "Senate probe finds excessive wheat market speculation", *Breaking News on Food and Beverage Developmet - North America*, June 25, 2009

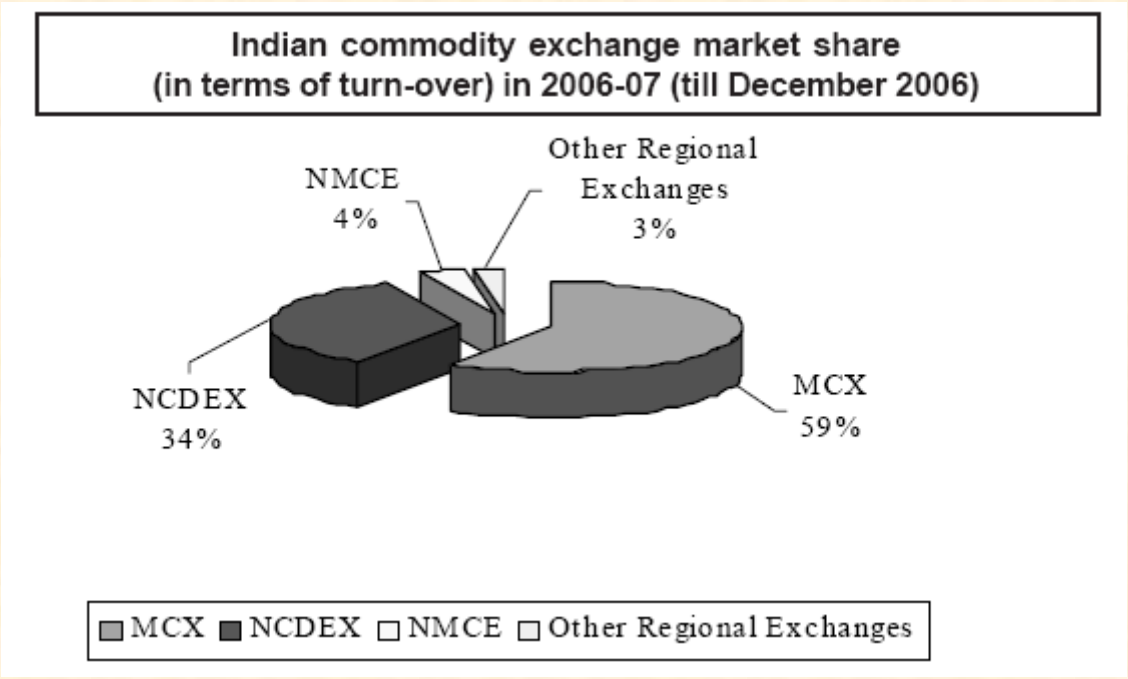
[14] "Senate study cites excessive speculation for problems in wheat futures market", *The Food and Fiber Letter*, July 6, 2009

[15] The current standard position limit of 6,500 contracts for wheat (this limit has not been followed for long time: some traders could hold up to 53,000 contracts). If this limit does not cure the volatility, the report prescribes to lower the limit to 5,000 contracts.

value of futures trading in commodities, which might cross the $ 1 Trillion mark in 2006. As compared to 59 in January 2005, 94 commodities were traded in the commodities futures market as of December 2006, and these included, among the others, major agricultural commodities (rice, wheat, jut, cotton, major pulses, and edible oilseeds), spices, metals, and energy. The growth in the commodity derivative trading witnessed in 2005-06 continued during 2006-07.

In India currently the three main commodity exchanges are Multi Commodity Exchange, Mumbai (MCX), National Commodity Derivatives Exchange, Mumbai (NCDEX), and National Multi-Commodity Exchange of India (NMCE). All of these exchanges trade, among the others, agricultural commodities. The growth in the volume of trading has been primarily propelled by Multi Commodity Exchange, Mumbai (MCX) and National Commodity Derivatives Exchange, Mumbai (NCDEX) (Figure 1).

Figure 1: Indian commodity exchange market share in 2006-07



Source: Economic Survey 2007-2008, Government of India

3 Background: evolution of commodity futures markets

Futures trading has a long history. Futures trading on a formal futures exchange originated in the U.S. with the formation of the Chicago Board of Trade (CBT) in the middle of the Nineteenth Century (1848). Grain dealers in Illinois were having trouble financing their grain inventories. The risk of grain prices falling after harvest made lenders reluctant to extend grain dealers credit to

purchase grain for subsequent sale in Chicago. To reduce their risk exposure, grain dealers began selling "To Arrive" contracts, which specified the future date at which a specified quantity of grain would be delivered to a particular location at a price identified in the contract. Fixing the price in advance of delivery reduced the grain dealer's risk exposure and made it easier to obtain credit to finance grain purchases from farmers. The "To Arrive" contracts were a forerunner of the futures contracts traded today.

Futures markets arrived in India some time later, about a decade after the commodity derivatives started in Chicago. Organized commodity derivative markets appeared in India for the first time in 1875, when the Cotton Trade Association started futures trading in cotton. Over time the derivatives market developed in several other commodities. Following cotton, derivatives trading started in oilseeds in Bombay (1900), raw jute and jute goods in Calcutta (1912), wheat in Hapur (1913) and in Bullion in Bombay (1920).

Legal framework in India

After Independence, the Constitution of India adopted by Parliament on 26th January, 1950 placed the subject of "Stock Exchanges and Futures Market" in the Union list and therefore the responsibility for regulation of forward and futures contracts devolved on Government of India. However, many feared that derivatives fuelled unnecessary speculation and were detrimental to the healthy functioning of the markets for the underlying commodities. As a result, only two years later, in 1952, commodity options trading and cash settlement of commodity futures were banned. Since then and until 2002 commodity derivatives market was virtually non-existent in India. A change in Government policy in futures markets began to appear in the early Nineties, after the Indian economy embarked upon the process of liberalization and globalization in 1990. In 1993 the Government set up a Committee to examine the role of futures trading. The Committee recommended allowing futures trading in 17 commodity groups. The Government accepted most of these recommendations and futures trading was permitted in all recommended commodities. Later on, in 2002-03, the Government of India has demonstrated its commitment to revive the Indian agriculture sector and commodity futures market, taking four fundamental policy decisions[16], which had the potential to proliferate futures contract usage in India to manage price risk.

[16] The four decisions of the Government are the following: "Firstly, Government of India, in early 2003, has given mandate to four entities to set-up nation-wide multi-commodity exchanges. Secondly, expansion of permitted list of commodities under the Forward Contracts (Regulation) Act, 1952 (FC(R)A). This effectively translates into futures trading in any commodities that can be identified. Thirdly, 11 days restriction to complete a spot market transaction (ready delivery contract) is being abolished. Fourthly, non-transferable specific delivery (NTSD) contracts is removed from the purview of the FC(R)." (J. Shah, 2003)

Commodity futures trading in India remained in a state of hibernation for nearly four decades, mainly due to doubts about the benefits of derivatives. The government has changed its stance in the last few years, probably due to the realization that derivatives can perform a role in risk management. The policy changes favoring commodity derivatives were also facilitated by the enhanced role assigned to free market forces under the new liberalization policy of the Government.

Conclusion

Food crisis and higher agricultural commodities prices are a big concern world-wide. Developing countries have reduced their food consumption because they could not bear the double or triple prices of wheat, rice, and other agricultural goods. Analysts are looking for the reasons of the raise of these "unwarranted costs". Commodity futures markets have been pointed to as one of the main causes. Despite the theoretical good properties of futures markets, in the last few years speculation has caused a sharp increase of commodities prices, especially of wheat. Anyway, speculation on futures markets cannot be considered the only cause of price instability. There are many elements of the food crisis other than commodities speculation that require urgent attention. But if deregulated speculation continues to induce artificial volatility in agricultural markets, it will be very difficult to finance innovative investments in rebuilding domestic agricultural production and distribution capacity in net food import-dependent countries. The artificial inducement of commodity price volatility by deregulated speculation will further make it difficult to internalize the costs of agriculture natural resource remediation and climate change effects in commodity prices. For these and other reasons, governments and regulators should assert control over the futures markets to prevent destabilizing "excessive speculation" in commodities.

GLOSSARY

C

Cash market: The cash market (or spot market) is a commodities market in which goods are sold for cash and delivered immediately. Contracts bought and sold on these markets are immediately effective. Spot markets can operate wherever the infrastructure exists to conduct the transaction.

Clearing House: A clearing house is a financial services company that provides clearing and settlement services for financial transactions, usually on a futures exchange, and often acts as central counterparty (the buyer actually pays the clearing house, which then pays the seller). The aim of the interposition of a clearing house between traders is the standardization of the counterparty risk in exchange-traded derivatives. If a trader belonging to firm "A" sells a contract to a trader belonging to firm "B", then at the end of the trading day, the clearing house will stand in between the two, buying (for future settlement) from "A" and selling (for future settlement) to "B".

D

Derivatives: A derivative is a financial instrument that is *derived* from some other asset, index, event, value or condition (known as the underlying). Rather than trade or exchange the underlying itself, derivative traders enter into an agreement to exchange cash or assets over time based on the underlying. Examples of derivatives are futures, forwards, and options.

E

Exchange: An exchange (or bourse) is a highly organized market where (especially) tradable securities, commodities, foreign exchange, futures, and options contracts are sold and bought. Exchanges bring together brokers and dealers who buy and sell these objects. Exchanges can be subdivided by object sold (commodity exchange or stock exchange), and by type of trade (classical exchange for spot trades, and futures exchange for derivatives).

F

Forwards: A forward contract, or simply a forward, is an agreement between two parties to buy or sell an asset at a certain future time for a certain price agreed today.

The party agreeing to buy the underlying asset in the future assumes a long position, and the party agreeing to sell the asset in the future assumes a short position. The price agreed upon is called the delivery price, which is equal to the forward price at the time the contract is entered into.

Futures: Futures contract refers to a standardized contract to buy or sell a specified commodity of standardized quality at a certain date in the future, at a market determined price (the *futures price*). The contracts are traded on a futures exchange.

L

Liquid market: A liquid market is a market in which individual market participants can transact quickly and efficiently without, in normal circumstances, significantly altering the prevailing market price. Characteristics of a liquid market include a small spread between buying and selling prices, and the ability to transact in large amounts.

O

Options: An option is a contract between a buyer and a seller that gives the buyer the right—but not the obligation—to buy or to sell a particular asset at a later day at an agreed price. In return for granting the option, the seller collects a payment (the *premium*) from the buyer. There exist two types of options: *call* options and *put* options. A *call* option gives the buyer the right to buy the underlying asset; a *put* option gives the buyer of the option the right to sell the underlying asset. If the buyer chooses to exercise this right, the seller is obliged to sell or buy the asset at the agreed price. The buyer may choose not to exercise the right and let it expire.

S

Spot and forward prices: The spot price of a commodity is the price that is quoted for immediate (spot) settlement (payment and delivery). Spot settlement is normally one or two business days from trade date. This is in contrast with the forward price established in a forward contract or future contract, where contract terms (price) are set now, but delivery and payment will occur at a future date.

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