

# Risk Management Tools in Europe: Agricultural Insurance, Futures, and Options

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As Europe reviews recent changes in agricultural policies and markets and looks to the future, its producers, policymakers and others are considering the need for and the availability of risk management instruments for agricultural commodities. Many see reform of the Common Agricultural Policy (CAP) and increased exposure to world market prices as increasing the variability in crop and livestock prices, and thus risks to producers. Prominent among the risk management tools receiving attention are agricultural insurance and futures and options contracts.

Currently, a range of agricultural insurance products, covering production risks such as crop yield shortfalls, are available in Europe. Insurance programs and products vary from country to country in levels of government support and in the specific production perils covered, reflecting the variety of crops grown and growing conditions in the various countries. In some countries, government-subsidized insurance policies covering multiple perils are available for many crops, while in others entirely private insurance covering a small number of perils (most often hail) for a few crops are available.

In Spain, for example, multiple-peril crop yield insurance is available through a public-private system. Coverage is available for a large number of crops, including fruits and vegetables. Farmers choose the level of coverage and the perils to be covered, including “all-risk” insurance; the government provides premium subsidies and reinsurance, through Entidad Estatal de Seguros Agrarios and the Consorcio de Compensacion de Seguros. An association of insurance companies, Agroseguro, has a large administra-

tive role in the program and pools risks. Public support accounts for around 50 percent of all costs, including administrative costs. Participation by producers in Spain in agricultural insurance is high relative to many other European countries: about 70 percent of the acres planted to cereals is insured.

Many other European countries, in contrast, have systems of agricultural insurance that receive less government subsidization and cover fewer crops than Spain. Perils covered are usually limited to a few named perils, such as hail and frost only, or coverage is limited to specific product qualities, such as sugar content for sugarbeets and starch content for potatoes. Germany and the Netherlands have agricultural insurance products that are, in most cases, limited to hail and plant disease coverage and are operated without subsidies.

While there is considerable variation in agricultural insurance programs across Europe, they are generally smaller and more limited in scope than the crop insurance program in the United States. The U.S. program, which has grown considerably since 1995 in levels of subsidization and types of insurance available, insured about 100 different crops in 2002, covering about 75 percent of the planted acres of major field crops. In addition to providing premium subsidies, which account for about 60 percent of the total crop insurance premium, the U.S. Government supports crop insurance through administrative and operating subsidies to insurance companies and reinsurance of crop insurance policies.

The U.S. crop insurance program includes traditional multiple-peril crop yield insurance as well as more recently developed revenue insurance. Under revenue insurance, an insured producer’s coverage is set and insurance payments are triggered based on expected

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revenue, which is the product of historical yields and market-based price expectations. Therefore, revenue insurance provides a degree of price risk protection in addition to yield risk production. U.S. producers are also able to manage price risk through forward contracting, and by using futures and options.

In Europe, there have been considerable efforts to develop agricultural futures and option markets. At least four new commodity exchanges that offer futures and options based on agricultural commodities have been established since 1988. In addition, European commodity exchanges have introduced trading in at least 38 new agricultural futures and options markets. These new markets include futures and/or options for wheat, corn, live hogs, rapeseed, rapeseed meal, and rapeseed oil.

In addition to futures markets for agricultural commodities, a number of European Exchanges operate by actively trading futures on energy products such as crude oil and various financial instruments, including sovereign debt instruments, currencies, and equity indices. Similar to the experience of futures trading within the United States, the trading in agricultural futures markets preceded energy and financial futures trading. While trading in many new agricultural futures markets has been introduced since 1989, trading of coffee, cocoa, and potato futures has taken place in Europe since the early- to mid-1900s. In contrast, European energy and financial futures trading began in the early 1980s.

Although many of the new agricultural futures and option markets are not actively traded, changes in economic and agricultural policies in Europe over the last 10 to 15 years appear to have created conditions more conducive to the development of futures and option markets. In particular, many of the new agricultural futures and option markets were introduced after the implementation of reductions in price supports for major commodities stemming from reforms to the European Union's (EU) CAP adopted in 1992 and implementation of the 1995 World Trade Organization (WTO) Agreement on Agriculture. In addition, several new commodity exchanges and a large number of new agricultural futures and option markets were established in Eastern Europe after the fall of the Iron Curtain in 1989 as the economic policy in this area shifted to a greater reliance on market-determined prices to guide the production and consumption of agricultural commodities. These policy changes appear to have stimulated demand for price risk management

vehicles by creating or increasing price volatility for agricultural commodities.

There are at least seven commodity exchanges in Europe that offer futures and options markets for agricultural commodities (table 1-C)<sup>2</sup>. Cocoa, coffee, and sugar are the leading markets, in both volume and open interest (table 2-C). Market prices are generally quoted in local currencies or euros. Most futures contracts specify delivery at ports, warehouses, or processing plants in Europe, although some of the coffee and sugar contracts specify delivery in the United States or other parts of the world. The size of trading units vary by commodity—from 100 metric tons for grain futures or option contracts to 5 metric tons for flour and coffee contracts. Most exchanges use electronic trading systems exclusively, although some exchanges use the traditional open outcry trading method.

Consistent with the trends in European agricultural policy toward reduced market intervention, most new European agricultural futures contracts have been designed to reflect the value of agricultural commodities produced and consumed within Europe. For example, many of the new futures contracts provide for delivery at interior European locations, rather than at export/import sites. Formerly, European agricultural futures and option markets were more heavily weighted toward commodities that either were not produced in Europe (e.g., coffee and cocoa) or were intended to reflect world market values for commodity exports from Europe (e.g., surplus refined sugar).

Trading activity on most European agricultural futures markets is substantially less than trading activity on U.S. commodity exchanges<sup>3</sup>. For commodities produced and largely consumed within Europe (e.g., wheat, corn, hogs, etc.), trading volume is significantly

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<sup>2</sup>Table 1 lists those European commodity exchanges that available information indicates have offered trading in agricultural futures and option contracts since 1989. Several other exchanges that are not included in Table 1 have indicated plans to offer agricultural futures and options trading but no information is available to indicate that trading has been initiated in such products.

<sup>3</sup>It is important to note that trading activity on several of the existing European exchanges is limited. For one exchange, the Poznan Commodity Exchange, trading activity has declined sharply apparently due, in part, to the implementation of price support programs by the Polish Government for the commodities traded on that exchange. In addition, available information indicates that there is very little trading activity in agricultural commodities on the Futuros de Citricos y Mercaderias de Valencia.

**Table 1-C—European commodity exchanges offering futures and option markets in agricultural commodities**

Commodity exchange	Location	Date established	Agricultural commodities offered
London International Financial Futures Exchange (LIFFE) <sup>1</sup>	London, United Kingdom	1982	Coffee, cocoa, white sugar, and wheat.
Marché à Terme International de France (MATIF) <sup>2</sup>	Paris, France	1986	Corn, rapeseed, sunflower seed, milling wheat, and wine.
Budapest Commodity Exchange (BCE)	Budapest, Hungary	1989	Corn, black seed, feed barley, feed wheat, live hogs, rapeseed, sunflower seed, soybeans, and wheat.
Poznan Commodity Exchange (PCE)	Poznan, Poland	1991	Live hogs and wheat.
Amsterdam Agricultural Futures Market (ATA) <sup>2</sup>	Amsterdam, The Netherlands	1958	Live hogs and potatoes.
Futuros de Citricos y Mercaderias de Valencia (FC&M)	Valencia, Spain	1995	Navel oranges and Valencia oranges.
Wareterminborse Hannover AG (WTB)	Hannover, Germany	1998	Hogs, piglets, table potatoes, processing potatoes, London potatoes, wheat, and rapeseed.

<sup>1</sup>The LIFFE offered trading in financial futures products exclusively until 1996 when it acquired the London Commodity Exchange (LCE) and began offering futures and options on agricultural commodities formerly traded on the LCE. LIFFE subsequently was purchased in 2001 by EuroNext.

<sup>2</sup>The MATIF and ATA merged with the Brussels and Amsterdam Stock Exchanges in September 2000 to form a new exchange called "EuroNext". The ATA is the successor entity to the Dutch Pork and Potato Market, which traded potato and live hog futures prior to the establishment of the ATA.

**Table 2-C—Leading European agricultural futures and option markets: Total annual trading volume during 2002 and open interest at month-end December 2002 (in contracts)<sup>1</sup>**

Commodity/Exchange	Futures		Options	
	Volume	Open interest	Volume	Open interest
Cocoa/LIFFE	1,802,142	169,133	194,682	33,678
Robusta coffee/LIFFE	1,905,319	120,558	139,394	21,087
White sugar/LIFFE	1,044,806	64,525	43,900	5,537
Rapeseed/MATIF	165,462	13,924	9,834	4,445
Milling Wheat/MATIF	107,602	4,802	1,679	1,388
Corn/MATIF	98,654	4,667		
Wheat/LIFFE	80,784	7,413	8,092	2,044
Potatoes/ATA	39,285	3,188	2,435	
Corn/BCE	9,450	1,347	305	
Wheat/BCE	9,271	909	150	

<sup>1</sup>The ranking shown in the table does not include commodity futures contracts traded on the FC&M, PCE, and WTB, since the FIA does not publish volume and open interest for these exchanges.

Source: Futures Industry Association, International Report, December 2002.

less than levels for the same or similar commodities in U.S. markets (table 3-C). Only cocoa futures and options approach trading levels in the United States. The differences in trading activity between Europe and the United States appear attributable in large part to the fact that the United States has historically had agricultural policies that rely more heavily on market-determined prices to guide resource allocation and consumption decisions. In addition, unlike Europe, the United States has a long tradition of relying on futures markets to set market prices and provide price risk management services for many agricultural commodities.

Patterns of commercial use of agricultural futures and option markets among market participants for risk management purposes do not appear to differ markedly between the United States and Europe. In the United States, producers historically have tended to use spot and forward contracts that frequently rely on futures trading to determine the final price, rather than use futures and options directly<sup>4</sup>. There are a number of reasons given for producers' preferences for spot and forward contracts over futures and options. These include avoiding unexpected adverse variation in the relationship between the cash and futures price

<sup>4</sup>According to the 1996 Agriculture Resource Management Study, about 30 percent of U.S. farm operators said that they used forward contracting; about 20 percent said that they used futures.

**Table 3-C—Comparison of trading activity in European and U.S. commodity markets: Annual futures and option trading volume for selected commodities in 2002 (in U.S. futures contract equivalents)<sup>1</sup> on all U.S. futures exchanges and leading European futures exchanges<sup>2</sup>**

Commodity	Europe	United States
Cocoa	1,831,080	2,079,980
Coffee	554,274	2,718,508
Sugar	1,027,382 <sup>3</sup>	6,314,773 <sup>4</sup>
Corn	46,237	18,132,447
Wheat	107,677	6,872,891
Hogs	2,731	1,931,260

<sup>1</sup>European futures and option trading volumes were converted to U.S. equivalent trading volumes by adjusting for differences in contract sizes between European and U.S. futures and option contract sizes.

<sup>2</sup>By volume, including ATA, BCE, LIFFE, and MATIF.

<sup>3</sup>Includes white and raw sugar.

<sup>4</sup>Includes world (#11) and domestic (#14) contracts.

Source: Futures Industry Association, International Report, December 2002 and Monthly Volume Report, December 2002.

as well as the transaction and financial costs and uncertainty associated with being able to meet futures margin calls. Also, crop loss risk—the chance that a producer's harvested production will not be sufficient to cover the quantity represented by the futures contracts acquired for hedging purposes—is often cited as a major reason for producers' reluctance to use futures for hedging crop price risk<sup>5</sup>.

These reasons may apply in Europe as well. Available information indicates that European futures markets primarily are used by merchants and processors to hedge price risks associated with their cash market business activity. European agricultural producers appear to make limited use of futures markets. For example, a survey of grain producers in Great Britain indicated that 11 percent had used futures and 15 percent had used options for risk management<sup>6</sup>.

The growth prospects for European agricultural futures and option markets likely will depend, in part, upon the effects of recent and future changes in agricultural policies within Europe on price volatility. Reductions in effective import protection for EU grains resulting from the Agenda 2000 support price cuts are likely to result in increased price volatility and risk for EU producers and commercial grain interests. Increased price volatility appears likely to enhance usage of certain existing European futures markets<sup>7</sup>. In addition, the next

<sup>5</sup>Crop losses can reduce or eliminate the effectiveness of futures hedging positions established prior to harvest time and may result in increased financial risk. In particular, producers who establish short futures positions prior to harvest are exposed to the risk that prices will increase after the position is established, thereby incurring losses on their futures position which may add to any financial losses incurred as a result of crop losses. The risk of crop losses also discourages the use of forward contracts to fix prices for new crop production prior to harvest time, as producers may incur cancellation penalties or costs if they are unable to deliver the quantity contracted.

<sup>6</sup>Bowley, Frank, speech at workshop on Risk Management and Insurance in the European Union, sponsored by the Committee of Agricultural Organizations in the European Union and the General Committee for Agricultural Cooperation in the European Union (COPA-COGECA). Brussels, Belgium, February 1-3, 2001.

<sup>7</sup>Given the relatively short period of time elapsed since the Agenda 2000 CAP reforms were initiated, it is difficult to assess accurately the potential impacts of these changes on European futures market activity. Available data on aggregate measures of futures market activity indicate a mixed picture regarding pre- and post-2000 trading levels. For example, aggregate trading volume for all wheat futures providing for delivery within the European Union has been little changed from pre-2000 levels, while aggregate open interest in these markets has generally increased.

round of international trade negotiations likely will bring pressures for additional price support reductions, which, if realized, could further increase futures and option markets activity generally within Europe.

Other factors that will affect the development of European futures and option markets include the availability of alternative risk management services, the size of the market for risk management services, and the structural characteristics of the underlying cash market. For example, policy changes that have the effect of increasing the correlation between European agriculture prices and world market prices could limit further development of European agricultural futures markets by exposing these markets to competition from existing and more active commodity markets outside of Europe, particularly those based in the United States. In such a circumstance, some European market participants may opt to use related non-European futures and option markets rather than less active and less liquid European markets for risk management purposes if effective hedging transactions can be executed at a lower cost<sup>8</sup>.

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<sup>8</sup>The cost of executing transactions includes brokerage commissions as well as the costs and risks related to execution of transactions that depend largely upon the liquidity of a market. Markets with low levels of liquidity (frequently reflected by low trading volumes) often have higher costs due to wider bid/ask spreads and higher transaction execution risks than more liquid markets. Transaction execution risks relate to the ability of market participants to establish positions quickly without affecting the market price. Traders in illiquid markets generally have less ability to enter or exit a position quickly without affecting prices and typically require longer periods of time to complete the desired transactions than traders in relatively liquid markets.

For European agricultural producers, further reductions in price supports and reduced barriers to international trade likely will mean greater reliance upon marketing methods commonly used by U.S. agricultural producers. For example, grain producers may enter forward contracts to fix prices for part of their new crop production or may simply rely on periodic spot sales of harvested crops over the course of marketing seasons in an effort to ensure they receive average prices for their crops over time rather than using futures and option markets as means of stabilizing income. Similarly, livestock producers may be more likely to use forward contracts as a means of reducing price risk associated with the purchase of animal feed as well as the purchase or sale of livestock.