

MICHAŁ A. JERZAK

THE FUTURES MARKET AS A TOOL FOR AGRICULTURAL COMMODITY PRICE-HEDGING UNDER THE CONDITIONS OF STATE INTERVENTIONISM IN POLAND

*From Department of Food Management Economics
of The August Cieszkowski Agricultural University of Poznań*

ABSTRACT. The Polish agricultural market in the last decade has been marked by considerable instability and fluctuations in the economic factors influencing production. Research has shown that Poland does provide conditions for the existence of agricultural futures markets, their effectiveness, however, depends on the political attitudes towards agriculture. The clash between the functioning of the futures market and the direct state interventionism in the grains market has led to the breakdown of the derivative instruments market on the commodity exchange. If interventionist policies are to be implemented without causing a head-on collision with the market tools for price-hedging and without lessening the impact thereof, it is required that intermediary forms of state interventionism be followed, which would allow the participants of the market to be actively involved in the circulation of goods.

Key words: commodities futures market, state interventionism, agricultural commodities, commodities exchange

Introduction

The period between 1990 and 2002 in Poland was marked by intensive laying of the groundwork for the functioning of the market economy. It was at that time that many market institutions were taking shape and assuming their present characteristics, including the institutions providing market instruments for managing price risk – the commodity exchanges, as well as the institutions participating in the process, such as commodity brokerage houses or licensed warehouses. The agriculture of that period was under strong influence of state interventionism, which considerably affected the prices of agricultural commodities and also the shape and functioning of the new agricultural institutions, as well as the attitudes of the people involved in commodity trading. The Polish agricultural market in the last decade has been marked by considerable instability

and fluctuations in the economic factors influencing production, including the prices of basic commodities, and above all, grains and pork. Governmental interventions in these markets did not always bring the desired effect. On the other hand, a considerable proportion of the agricultural market players did not have the chance to use their own discretion to apply market instruments to manage price risk and stabilize the income from farming, which made production less and less profitable and, simultaneously, gave rise to a growing dissatisfaction in the farming community.

This article tackles the problems of the economic conditions and opportunities in the Polish agriculture for the application of the futures market instruments as tools for managing the risk of adverse price changes and stabilizing the prices of agricultural commodities. It also recounts the results of an experiment conducted between 1998-2000 on the application in the Polish agricultural market of the futures market instruments as tools for hedging grain prices in a situation when the government's interventionist policy directly confronted and influenced the functioning of this market in Poland.

The futures market in agriculture

In agriculture, more than in any other area of the economy, the fluctuations in the economic setting for production are poorly tolerated. The investment made by the producer in land, the means of production and the equipment is usually beyond their current financial means, thus forcing them to resort to obtaining the help of a bank. The producers are, therefore, constantly burdened with loans, the repaying of which depends on the price they obtain for the commodities they have produced. This is, however, the most uncertain aspect of the business – the price that the producer will be able to obtain at the moment of selling his commodities. If it is lower than the cost of production, the farmers will not be able to repay their debts and may consequently lose everything.

In the case of production risk, which cannot be avoided or predicted with certainty – floods, hailstorms, droughts, etc. – farmers can undertake measures in order to mitigate the results of such occurrences, by taking out insurance against losses from those risk. However, the one type of risk that leaves agricultural producers, as well as manufacturers powerless, is the market risk, especially the risk of adverse price change. The countries where the market economy has been developing uninterruptedly for many years naturally developed strategies and mechanisms making it possible to avoid the risk of future unfavorable sales prices of commodities. The basic tools used for this purpose are commodity derivatives. They emerged because of the needs of the economy, and their considerable role in risk management in agriculture was defined many years ago.

In literature on this subject, the futures markets are sometimes called derivative instruments/securities or simply derivatives, and are considered securities whose value depends on the value of some other, basis variables (Hull 1997). They are also regarded as financial instruments whose value depends on the future prices of the so called basis assets. Derivative instruments as such have been known for ages to both producers as well as traders. They were contracts which guaranteed the future purchase or sales prices of goods (assets), signed in advance in order to insure the parties against adverse market price changes. The term “derivative instruments” indicates that their value is derived from the value of another asset or commodity, which makes them effective as

tools securing against unexpected price changes (**Bernstein 1997**). These securities fulfill a number of useful functions in the economy, one of which seems particularly essential. Namely, it makes it possible to redistribute the risk towards those bodies that are willing to accept and manage it. It has been determined that the instruments of the futures markets are valuable only in those environments which are open to change. Alone, they do not bring about fluctuations in the prices of basic commodities, as is commonly feared. The futures markets truly flourished in the second half of the 20th century, thanks to the development of methods of fine valuation and the increasing safety in trading achieved through the establishment of regulated futures markets.

Purchasing a future instrument in order to secure the assets one possesses is actually no different from taking out standard insurance. The cost of security incurred in both cases may be returned manifold (if damage occurs) and similarly, in both cases “the installment” is lost if nothing adverse takes place. Insurance companies, therefore, offer a financial lever very much like derivative instruments. It simply does not appear so sinister, because we assume that the instruments purchased from the insurance companies have a specific purpose. Nonetheless, there is no difference between the intentions of the two types of contracts. Derivative instruments, purchased in quantities necessary to secure one’s position in underlying assets, amount to the insurance against adverse price changes, in the same way as insurance policies covering those assets insure them against fires or other disasters. In the world economy, the impact of this market is growing steadily. Apart from the commodity exchanges which have been around for decades, new ones are appearing and successfully offering these instruments to traders around the world. Table 1 shows that between 1997-2000 in the countries which are considered leaders in commodity trading (e.g. the USA, the UK) the number of signed contracts maintained a high, but reasonably stable level. The largest, threefold increase in the number of the contracts signed in the commodities derivative market, was noted in Germany. It is optimistic that the number of contracts in the so called other commodity exchanges around the world rose twofold. This increase is mostly thanks to the new exchanges established on all of the continents which successfully trade in the commodity futures market.

Table 1

The volume of trading in derivative instruments on the commodity exchanges around the world (Overview... 2001)
Wolumen obrotu instrumentami pochodnymi na giełdach towarowych na świecie (Overview... 2001)

Country Kraj	Number of contracts per year (M.) Liczba kontraktów rocznie (mln)			
	1997	1998	1999	2000
USA	635	707	655	648
Great Britain – Wielka Brytania	277	264	201	217
Japan – Japonia	125	124	127	156
Germany – Niemcy	109	187	314	365
Other – Inne	383	388	428	640

The above data represent the overall commodity market, however, agricultural commodities hold a well-grounded position there. 90.2 M. contracts in agricultural commodities were signed in the USA in 2000, which accounts for over 13% of the overall trading volume. In 2001, 87 M. contracts were signed. Likewise, in Japan 28 M. contracts in agricultural commodities were signed in 2000, which amounts to 19% of the total trading volume, and in 2001 the number of contracts was 27.5 M.. In Germany, the year 2000 brought 0.35 M. contracts in agricultural commodities, which accounts for only 0.1% of the total number of commodity contracts signed there. In 2001 this number was up to 0.54 M. contracts and this tendency is being maintained (**Overview...** 2002). In Poland, the agricultural commodities market encountered derivative instruments for the first time in 1995 at the Poznań Commodity Exchange. They were European-style commodity calls options for frozen half carcasses from the ARR (Agricultural Market Agency) reserves. Two years later, in the commodity exchanges in Poznań and Warsaw, American-style call options and put options were offered on milling wheat also from the ARR reserves. In Poland's economic history, the first and, so far, the only futures contracts in the commodity market were signed in Poznań in 1998, where the basis commodity was milling wheat.

An analysis was carried out in the grains market, which is one of the largest and the most liquid commodity markets in domestic agriculture. The volume of grain production ranges between 24-28 M. t per year, while the domestic grains consumption is quite stable and normally reaches between 28-29 M. t. When it comes to the trading volumes, the market is dominated by trading in wheat, reaching 8.5 M. t per year. Simultaneously, it involves the largest number of potential traders.

The analysis of the wheat prices showed that between 1990 and 2002 they were quite varied, with standard deviation ranging from 2.15 PLN in 1991 to 43.47 PLN in 1996 and 49.30 PLN in 2000. A similar variability was noted in the rye market, where standard deviation ranged from 3.65 PLN in 1991 to 66.8 PLN in 1998, and 28.2 PLN in 2000. The above level of price changes classifies Polish agriculture market as one of this where production is exposed to considerable instability with regard to the price and, thereby, charged with high price risk.

In addition, the risk of adverse price changes that producers face is further aggravated by the fact that a considerable proportion of grains, i.e. 75% of crops, remain on the farms and are stored there. There are also no developed private techniques working towards the reduction of the risk of adverse price changes, such as vertical integration of the market participants. This situation indicates that it would be reasonable to undertake actions aimed at establishing the commodity futures market in order to hedge commodity prices in future transactions. Still, although there are theoretical premises suggesting that functioning of the futures market should be feasible, among others in the grains market, and despite two-years practical experience of the Poznań Exchange, the existing political and economic conditions have not been conducive to the development thereof.

Commodity futures market and state interventionism

When attempting to find reasons for the above situation, one must bear in mind that agriculture as part of the national economy is typically considered naturally weak and unattractive as a potential partner for other branches of the economy, which is related to its characteristic features, such as:

- seasonal character of production and dependence on the soil and the climate conditions,
- high risk related to the long production cycle,
- long return period on the capital tied into technological investments,
- inability to quickly change the field of production,
- combining of producer and consumer functions,

Agriculture deals primarily with the production of foodstuffs and as such, it receives special treatment. The grain and meat markets enjoy state protection in most countries. The governments of those countries consider the provision of food security to their people to be one of their main objectives. In Poland, too, such an approach was taken in the period under scrutiny, although the government's policy on agriculture was ambiguous, and above all, it did not clearly specify the rules concerning the functioning of the agricultural commodities market. This situation put the commodity futures market, whose natural habitat is the so called free market, in a peculiar predicament with regard to its opportunities for growth.

On the one hand, the government policy included interventionist activities meant to support agricultural producers and to ensure profitability of their production by arbitrary price fixing or using direct payments to purchasing prices. On the other hand, there was talk of a market economy where free-market rules were to regulate the supply and demand in agriculture. This ostensibly self-contradictory system caused severe criticism, yet it was sanctioned by successive governments and it was endorsed in the most strategic documents on agriculture.

The dominant opinion among the critical voices was that government's interventions in the market hindered and slowed down the development of the market economy, including that of the market instruments offered by the exchanges – e.g. the agricultural commodity derivatives. In other words, the government's direct interference into commodity trading processes and prices, which took place in Poland, brought about “market incapacitation” of the agricultural market players. This is because in their decision-making processes, they stopped following the market stimuli and instead they concentrated on the information originating in governmental agencies.

It is due to interventionism that the agricultural commodity exchange market in the European Union, although gaining in significance, is still very limited. It involves those commodities which are either excluded from the intervention scheme, or commodity quota allocated to the global market. Criticism of interventionism is further supported by the domestic experience from the only futures trading episode so far, i.e. on milling wheat in the Poznań Exchange in 1999, which is presented in Figure 1.

The case illustrated in the chart shows that in the initial stage of operation (up to June 1999) the market development seemed very promising. However, the governmental intervention in the grain market which took place directly before the harvest and included a state increase of the minimum purchasing price to a level exceeding the futures price on the exchange, led to the breakdown in the development of the derivative instruments market.

On the other hand, it is known that all the governments of both the developed and the developing countries in the world employ interventionist policies in agriculture, as confirmed by data presented in Table 2.

The above data show that in the USA, the cradle of commodity exchanges and price hedging exchange instruments, in 1999 farmers received support equivalent to 20% of the average value of sold output per farmer. In Poland support amounted to 23%, this

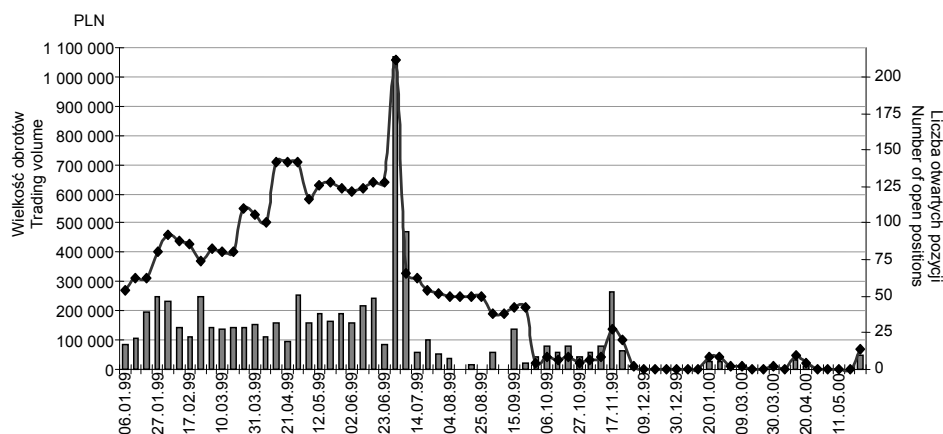


Fig. 1. The influence of state interventionism on the functioning of the derivative instruments market in agriculture (Jerzak 2000)

Ryc. 1. Wpływ interwencjonizmu państwowego na funkcjonowanie rynku instrumentów pochodnych w rolnictwie (Jerzak 2000)

Table 2

The average level of support for farmers in OECD member states between 1997-1999 (Approaches... 2000)

Przeciętny poziom dopłat dla producentów rolnych w krajach OECD w latach 1997-1999 (Approaches... 2000)

Country Kraj	Support amount (PSE) Kwota dopłaty (PSE) (M. USD)	Weight of support* Wielkość dopłaty* (%)
Australia	1 344	7
Canada – Kanada	3 529	17
Czech Republic – Czechy	722	18
EU – UE	116 552	44
Hungary – Węgry	661	13
Japan – Japonia	53 127	61
Korea	17 398	65
Mexico – Meksyk	4 996	19
New Zealand – Nowa Zelandia	98	2
Norway – Norwegia	2 675	66
Poland – Polska	3 521	23
Switzerland – Szwajcaria	4 951	70
Turkey – Turcja	12 133	34
USA	44 303	20

*As a percentage of the output value in farm.

*Jako procent wartości produkcji towarowej w gospodarstwie.

being quite a comparable quantity. Consequently, one may want to ask why it is that the US interventionism in agriculture does not collide with the functioning of the market, nor does it interfere with the market price, and on top of that, the commodity exchanges have experienced such flourishing development of the derivatives markets in agricultural commodities. In Poland, on the other hand, despite the similar size of support, interventionism has arrested the development of price hedging exchange instruments (derivatives). Even a cursory analysis of the situation leads to the location of its causes in the appropriate selection of the form of state intervention and the proper laying down of the procedures.

In the past decade, the grains market as well as other basic agricultural commodity markets in Poland were subject to direct governmental interference in the trading process and price pegging. Interference was arbitrary in nature, through direct payments and departmental fixing of intervention prices. Such a situation made it impossible for a nationwide market-balance price for a commodity to be arrived at. It also gave rise to a peculiar price duality, whereby the official purchasing price subject to government support existed side by side with the so-called market price. This led to the situation in which government takes over the job of price setting from the market, and the role of derivative instruments became very limited and even superfluous.

There exists another, more market-friendly form of interventionism – through indirect activities. It has been used in Poland, too, in the form of preferential loans, or subsidizing fuel prices. This form of state interventionism allows the government to meet its agricultural objectives in an indirect way, without interfering into commodity trading or price setting. In such a situation, the government's actions are no longer antagonistic towards the opportunities the commodity futures market offer. The commodity exchange can then successfully develop the futures market and offer its clients an opportunity to hedge the price for future transactions independently.

Conclusions

To sum up, it should be stated that Poland does offer the conditions necessary for the agricultural futures markets to exist. Their effectiveness, however, depends on the political line towards agriculture. This market requires that the laws of supply and demand and the rules of competition be adhered to. It was the clash between the operation of the futures market and the forms of direct state interventionism observed in the Polish grain market that has led to the breakdown of the derivative instruments market on the commodity exchange. It needs to be highlighted, though, that it is possible to continue interventionist policies in agriculture and yet avoid conflict and the undermining of the role of price-hedging market instruments. It would require that direct interventions be abandoned and replaced with indirect methods making it possible to activate market players.

The continuing liberalization of the agricultural market in the EU, whose member Poland has recently become, is forcing us to search for market ways to hedge the prices of commodities sold by producers as well as to stabilize their income. If Poland accepts the EU's clear agricultural policy, it will create conditions conducive to the development of the agricultural futures markets as important tools for price-hedging and, therefore, stabilizing incomes in farming and the entire domestic agricultural market.

Literature

- Approaches** to income risk management in OECD countries. (2000). In: Workshop for income risk management. OECD, Paris.
- Bernstein P.L.** (1997): Przeciwn Bogom. Niezwykłe dzieje ryzyka. WIG Press, Warszawa.
- Hull J.** (1997): Kontrakty terminowe i opcje. Wprowadzenie. WIG Press, Warszawa.
- Jerzak M.A.** (2000): Znaczenie rynku terminowego dla rozwoju instytucji giełdy towarowej w Polsce. Roczn. AR Pozn. Rozpr. Nauk. 305.
- Overview** of the world's commodity exchanges. Materials from the 22nd International SFOA Bürgenstock Conference. (2001). Swiss Futures and Options Association, UNCTAD, Bürgenstock.

RYNEK TERMINOWY JAKO NARZĘDZIE GWARANCJI CEN TOWARÓW ROLNYCH W WARUNKACH INTERWENCJONIZMU PAŃSTWOWEGO W POLSCE

S t r e s z c z e n i e

W artykule poruszono problem możliwości zastosowania instrumentów pochodnych w celu zabezpieczenia cen towarów rolnych w transakcjach przyszłych. Dodatkowo podjęto próbę określenia możliwości i form interwencjonizmu państwowego w rolnictwie współdziałającego z gospodarką rynkową i umożliwiającego funkcjonowanie rynku instrumentów pochodnych na towary rolne.

Omawiając problem na przykładzie krajowych doświadczeń, w konkluzji stwierdzono, że efektywność funkcjonowania instrumentów rynku terminowego na rynku towarów rolnych jest uzależniona od polityki wobec rolnictwa. Uznano również, że istnieje możliwość prowadzenia polityki interwencyjnej w rolnictwie bez zdecydowanej kolizji interesów i bez umniejszania znaczenia instrumentów rynkowych gwarantowania ceny.