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The agricultural futures market in low development countries: a policy to respond to the volatility of prices?

Abstract

This work discusses the possibility, or rather the effectiveness, of the use of agricultural futures as a means of hedging to minimize exposure to price risk. In particular, the analysis refers to "low-development countries" (LDCs), countries in which agricultural products play a prominent role and in which the process of market liberalization, which took place following the removal of state intervention, is determining an increasing exposure to price volatility. Knight's uncertainty is said to make both producers and speculators more risk averse, hence more conservative. In particular, when the futures price is well above the expected spot price (adjusted for the Knightian uncertainty), the optimal position for the producer is a total hedge of his production, while the optimal position for the speculator consists in not operating at all in the market. We can limit ourselves to observing that if a single producer and a single speculator operate in the market, the equilibria that can be reached are three: of complete exchange, of non-exchange and of partial exchange. The possibility of obtaining one of the three equilibria depends on the degree of risk aversion and the degree of Knightian uncertainty possessed by each of the two different subjects. Access to the capital market is a crucial element for the development of agriculture, both in the start-up phase and in the improvement phase.

The search for new capital and new tools to facilitate market access requires a high degree of trust on the part of financial market operators, a trust that is often compromised by the low profitability of loans and the high risk associated with them. The exposure to risk of agricultural activities limits, in fact, the interest of traditional finance, reducing the availability of capital to the few remaining resources within the sector itself after the flight to more attractive alternative uses. Hence the need to introduce new financial and insurance techniques and services, such as to guarantee the agricultural sector the capital necessary for growth and, at the same time, attractive return opportunities for investors. Specifically, it is stated that one of the most profitable paths to follow in this regard is implementation within all EU member states of particular agricultural reforms that introduce risk management techniques in agriculture already successfully implemented by the U.S.A.[1]

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Introduction

To contain the risk associated with price volatility, various solutions have been proposed, but all agree on the need for a shift in policies, i.e. a shift from aggregate market policies (e.g. agreements limiting exports) to policies studied. This is in consideration of the fact that supply control policies tend to be too expensive and slow down the responsiveness of producers to changes in prices, generating high opportunity costs of economic growth. An alternative to them would, in fact, be policies at the producer level, such as encouraging the use of futures on agricultural products. It is believed that futures markets[2] can take on an insurance role for both producers and traders, who face price volatility, as well as represent more cost-effective policies.

This policy, however, is not easy to establish in "low-development countries", specifically it is discussed whether it is more convenient to establish one's own futures markets or whether, instead, it is better to resort to existing markets: both hypotheses would obviously involve disadvantages and advantages. It is the volatility of the spot prices (prices for cash)[3] that determines the existence and functioning of the futures markets, and in particular the so-called "short volatility" (which differs from the long one) justification of an intervention policy both internally and internationally. Trade in agricultural products constitutes 40% of total world trade, but this is not a homogeneous figure, since very different specific situations can be identified, for example according to about 20 of the poorest countries in the world rely only on one or two primary products for their export earnings,[4,5] in some countries, such as Nigeria and Uganda, only one product manages to account for up to 80%. In these countries, the exposure to price risks is significantly higher than in countries with a more complex composition of exports. The study confirms the growing trend of price volatility and, therefore, the potential of futures markets to limit the exposure of agricultural commodity producers to unexpected price changes, especially for those operating in countries that are heavily dependent on exports of such goods. In them, the volatility of prices could produce harmful effects on economic development and therefore it is in their interest to reduce it, or in any case limit its impact.

The World Bank has highlighted the failure of traditional stabilization schemes and suggests that market-based risk management tools, despite their shortcomings, can be a viable alternative, hence a policy that involves the use of new , or already existing, futures markets on agricultural products will necessarily have to consider them internally. In particular, according to Tompkins (1996)[6] futures markets could be used for:

- provident hedging: those who deal with commodity trading (traders) get the products on the spot market, so they can remove the uncertainty regarding the price level by selling the products at a predetermined price and at a fixed date in the future on the market futures;

a. Make pricing more flexible: for example, contracts with a base price allow traders to hedge against price uncertainty and make a small profit when it is possible to anticipate favorable price movements;

b. Being able to identify all hedges: the price difference between futures contracts with maturity differences, also known as the price spread, indicates the availability of securities on the market. If the price spread is small, the securities are solid and there is an incentive not to sell. On the contrary, if the spead on the price is large, traders can avoid investment costs through the simultaneous operations of spot sales of products on the spot market and the purchase of futures.

What the document is anxious to underline is that, in any case, the viability of futures markets does not depend on the volatility of national prices, but on that of world prices. In this regard, two works were developed one.[7,8] Gemmell compared a stabilization scheme of traditional stocks with forward contracts in reference to three commodities: sugar, coffee and cocoa. The results he arrived at differed depending on the good considered, so he concluded that partial price stabilization would stabilize the largest individual gains of countries, but with such different extensions between each that some countries might remain dissatisfied. Gilbert used an international, multi-product approach in which he assessed futures trading and the benefits of stabilization schemes in an environment with incomplete market insurance. He concluded that resorting to the futures market to hedge was very expensive, consequently the benefits deriving from its use were greatly reduced by this burden. The burden of this burden was partly justified by the fact that the futures markets offered hedging not available in any other way. For Gilbert the introduction of costs for the use of these markets could lead to different results and therefore for the "low developing countries" the use of credit markets would have been more efficient.

In a more recent work McKinnon, as well as previous analysts, exalts the role of hedging to minimize price risk, but he does not focus on traders, but on growers, who, unlike the former, are faced with both the uncertainty relating to production and that concerning the price. The use of the futures market allows growers to separate the two different risks, so as to be able to affirm that futures markets are a tool for reducing price risk and not generic risk. A statistical model has been developed on the theoretical structure[9] which proposes the following representation of the mean variance:

$$Max\ Z\ =\ E(w)\ -\ j\ Var\ (w)$$

With w = pq + n (h - f) and considering j a risk aversion parameter, p the spot price of the harvest, q the amount raised, n the number of futures contracts hedged, h the futures price at the moment at which the hedge is arranged and f the price of the futures at the time the hedge is removed. In particular, it is highlighted that there is a predictable relationship between the spot price and that of futures.[10]

$$p\ =f\ +\ b$$

Denoting with b the price differential, which is assumed to be independent of the futures price. Through a series of steps, which pass through the determination of variances and covariance's of most of the quantities in question, we arrive at determining the optimal hedge, which consists of two parts: a pure speculative position and a pure hedging position. The first part tends to zero when the subject has an infinite aversion to risk (j tends to infinity), while the second depends on the probability distribution, different from subject to subject, of current revenues and futures prices. The model then proceeds by determining different levels of coverage depending on the extent of the risk, in order to allow the potential user to determine different hedging strategies. Other models have followed one another over time, but the theory seems unanimous in suggesting that a hedging of risks on all producers' output is not feasible, however, in markets undergoing liberalization, the use of the futures market can lead to a possible reduction of the risk of producers. Returning to the specific case of "low-development countries", it is observed that these have for a long time maintained a rather skeptical behavior towards futures markets, as their limited knowledge led them to believe that they were characterized by a strong level of speculation and manipulation. However, following the reduction, albeit limited, of market risk and the simultaneous abandonment of policies of isolation from world market conditions by many governments, there has been a strengthening of confidence in the futures market, an increasingly strengthening loud. Obviously, the transition to a free market system can neither be immediate nor even uniform, from this it follows that a level of demand for hedging instruments for hedging transactions has certainly been created, even if it is still being defined. Having ascertained that in countries with low economic development there is a demand for means of hedging the price risk and that recourse to the futures market may constitute a possible answer to this demand, it is now necessary to evaluate whether it is more convenient to use the markets already existing in the countries with advanced economic development or if, on the contrary, it is preferable for low-development countries to establish new ones. The reasons that can be adduced in support of the first hypothesis essentially refer to speed and costs.

Low-development countries have an immediate need for the benefits that can be obtained from the futures market and obviously if they decide to establish their own, these benefits would be greatly reduced by the inevitable set-up costs. Furthermore, to function at their best, markets must be characterized by high levels of liquidity and credibility, requirements that a new market is unlikely to have. In this regard, the extremely important role of the Clearing Houses in the most advanced regulated markets should not be forgotten: by acting as the counterpart of each operator, they ensure the settlement of trades, thus increasing the credibility and security of contracts. The use of foreign futures markets generates not only benefits but also costs[11] could also lead to limited opportunities for risk reduction. Analyzed the types of risks developing countries face in using foreign futures markets for primary commodities, with particular reference to foreign exchange risk and "base" risk (by base we mean the difference between spot price and futures price), i.e. the risk that the same product is appreciated differently in the spot market and in the futures market, causing a possible collapse of the latter. however, the base risk may be lower in the case in which the goods are subject to international trade, since in this case the price fluctuations reflect less the conditions of supply and demand of the domestic market and more those of the situation world. Developing countries could thus use foreign markets to hedge against domestic fluctuations in the prices of their products, given that products traded outside the country in question are likely to have different characteristics and prices.

The currency risk deserves particular attention. The existing futures markets in developed market economies trade in the local currency or in US dollars, so any foreign trader who wants to trade in them must procure these currencies, but this could be a problem for traders in low-developed countries, since in these countries the credit controls are very stringent. If producers - exporters receive dollars for their products and at the same time take an opposite position with dollar futures contracts, they automatically hedge themselves against exchange rate fluctuations. These two types of risk make it difficult

for operators in low-development countries to enter foreign futures markets, also because brokers are often reluctant to accept subjects with such a high risk as clients. The foregoing explains why many economically developing countries are showing a growing interest in creating their own futures markets. However, for this to be possible, certain characteristics must exist: an essential condition is the free fluctuation of prices, since it generates instability and therefore risks, which in turn stimulate the demand for hedges. It is also necessary that prices act as signals for market agents, which means that the information flows must be fair and contain as much data as possible on the market (production, stocks, demand, etc.). There must be both macro - economic and micro - economic conditions: the former include free access to the information market (prices, quantity, quality and location of products), distribution systems, relevant credit markets and financial institutions, a stable currency and credible and a solid legal framework that includes a strong property rights system; the latter, on the other hand, refer to the existence of viable commercial enterprises and sufficiently insightful financial institutions, capable of managing risks and acting as speculators. These and other conditions become all the more accessible, the more economic development advances, not forgetting, however, that the costs necessary to establish and make a market operational, to create and maintain a sufficient degree of liquidity, to maintain competitiveness, to seeking and transmitting information, etc. In general it can be said that the costs necessary to create a market depend very much on the starting conditions of the country and on the existing technological level.

The main obstacle that developing countries have to face by resorting to the use of foreign futures markets (and therefore one of the factors in favor of establishing their own markets) is essentially financial and consists in respecting the margins established by the Clearing House. These countries, in fact, frequently find it impossible to have the necessary liquidity reserves, and this leads them to affect the state foreign exchange reserves, thus compromising the stability of the country itself. The probability, previously analyzed, that the base risk associated with the use of foreign markets is high is a further reason in favor of the hypothesis of setting up domestic markets, although this risk, as it is dependent on contracts, could be sustainable with contracts well structured. In fact, extensive and punctual agreements could improve the information flow in both quantitative and qualitative terms, which would result in better investment choices and more reliable price forecasts. The role of "information collectors" played by the futures markets is of central importance for the efficient use of resources in the spot market, which can help to reduce price fluctuations. Despite all the positive effects potentially obtainable by trading on futures, it is observed that many of the producers in low-development countries are too small and lack adequate credit instruments to be able to successfully negotiate on these markets, even if the collaboration between several local producers could allow to obtain a sufficient level of production and credit.

In conclusion, it can be said that there are clear barriers that low-development countries must overcome if they want to benefit from the potential offered by both foreign and domestic futures markets. The use of existing markets could be the most convenient option, but currently it could be very difficult to operate there, on the other hand, domestic markets are more accessible, but also very expensive to set up. From the observation of the current scenario, it can be seen that more and more low-development countries are establishing capital markets, also through the use of external resources, which greatly favors the use of futures markets. In detail, it can be noted that there are very different situations: countries such as China where the explosion of futures markets has already occurred, others such as Hungary and Taiwan which are seriously considering the possibility of creating them and others, such as the South African countries - Sahara, which are beginning to explore the potential that can be obtained by using these markets. The successes reported by various countries and the multiple positive aspects highlighted during this discussion seem to demonstrate that there is no reason why futures markets and other financial risk management tools should not be used by low-developed countries to offset the price risk on assets.

The futures market

Establishing a commodity futures market means providing risk-averse producers with an alternative to reduce their risk exposure. The equilibrium of the futures market is determined by the interaction of economic operators, who take a position on futures with a precise expectation of profit. The conventional analyzes carried out on the equilibrium of the futures market,[12,13] all start from the assumption that there is a single probability distribution for the risk factors, on the other hand, for first pointed out the difference between risk and uncertainty: "measurable uncertainty, or risk in the strict sense, is very different from non-measurable uncertainty, which is not configured as uncertainty at all". In particular, he narrowed the term uncertainty to the non-quantitative type.

Over time, various analytical approaches have developed around Knight's model of uncertainty,[14] the most important.[17] In the first approach, Scmeidler characterizes individual preferences in the case of uncertainty, using the generalized expected utility of Choquet according to a non-additive distribution. In the second, however, he proposes a maximum and minimum expected utility to be determined for the preferences model considering, however, multiple main preferences. The application of both models to financial markets has always seen the analysis focus only on speculators or only on hedgers, the article in question, on the other hand, evaluates the effects of Knight's uncertainty on competitive equilibrium in an incomplete market: that is on a balance that concerns both types of operators and that relates solely to the commodity futures market.

The basic model

The only period from t = 0 to t = 1 is considered, the spot price at time t = 1 is called p and is configured as a limited random variable with a given average. By choosing an appropriate unit of measurement, the average is normalized to Mp = 1 and the extremes of the spot price to (1 - a, 1 + a), where a is a positive number. To simplify the analysis we set a = 1 and, therefore, the spot price at time t = 1 is contained in the interval (0, 2), including extremes. Furthermore, the variance of the spot price is assumed to be Vp.

The market is made up of a single risk-averse producer and a single speculator, and each of the two subjects has a specific utility function, which can be expressed as follows:

$$u\left(x\right) = -e - Rx \text{ and } us\left(x\right) = -e - Rsx$$

where R and Rs are the risk aversion coefficients for the producer and the speculator, respectively.

At time t = 1 the producer will have a unit of output that he can sell in the spot market, to reduce his risk exposure he could, therefore, sell futures at time t = 0. The speculator operates in the futures market solely to exploit opportunities are favorable, so the market is only in equilibrium when the amount of futures contracts sold by the producer equals the amount of futures contracts purchased by the speculator. The equilibrium price of the futures is indicated with pf. Given that the manufacturer is aware that if he shifts part of the risks to the

speculator he will have to pay an insurance premium for this shift, pf should be lower than the expected spot price, this implies that in the following analysis pf will be considered between 0 and 1.

The manufacturer's coverage decision

Assuming that the producer sells a futures contract at value Z> 0 to hedge against the price risk, at time t = 1 the value in his possession will be:

$$W = p + Z\left(pf - p\right)$$

where both p and W are limited random variables with normal distribution and W is included between the minimum value Wl and the maximum value Wh (limit values of which, for simplicity, the calculation is omitted).

At this point, to consider the Knightian uncertainty, the e contamination model is adopted, that is to say that the producer believes that, with probability e, the spot price at time t = 1 will normally be distributed and contained within an interval. With probability 1 - and the distribution of the spot price will be completely arbitrary.

That said, the producer is faced with an expected utility function that leads to different results depending on the value assumed by the variable and, in addition to the presence or absence of Knight's uncertainty. In particular, if the futures price is lower than the expected spot price (adjusted for Knight's uncertainty) the producer covers only a part of its production, when, on the other hand, the price is equal to or higher than the expected price the producer adopts a total hedging strategy.

Also, a Knightian producer always covers more than a non-Knightian producer. It should also be noted that under Knight's uncertainty two expected prices can be identified: the expectation of the reference distribution of the price (i.e. the normal and limited distribution) and the expectation of the mixed distribution of the price, which derives from the method of contamination by e. Not considering Knight's uncertainty, the expected utility approach leads to the conclusion that when the futures price is lower than expected, the choice of a partial hedge (which grows as the futures price increases) is the best one. In summary, Knight's uncertainty makes the producer more risk averse, thus inducing him to take a broader position on futures.

The speculator's decision

Suppose that the speculator purchases a futures contract whose value is Zs at time t = 0, obviously if Zs then becomes negative the operator sells the contract. At time t = 1 the value held by the subject is:

$$Ws = Zs\left(p - pf\right)$$

Where p and Ws are random variables normally distributed and contained in a given interval, in particular Ws has Wsl as its lower limit and Wsh as its upper limit (limit values of which we omit the calculation). Proceeding in a similar way to what was done in the case of the producer, we arrive at a series of final considerations: the speculator buys futures contracts only when the futures price is lower than the expected spot price (adjusted for Knight's uncertainty), otherwise, in fact, the speculator will not operate in the futures market. In addition, a Knight speculator always buys more futures contracts than a non - Knight speculator. Similarly to what was seen for the producer, Knight's uncertainty also produces two expected prices for the speculator: the expectation of the reference price distribution and that of mixed price distribution. The analysis of the expected utility suggests that the speculator will buy futures contracts as long as their price is lower than the expected spot price and will buy many more the lower the price of the same. In general, Knight's uncertainty makes the speculator more risk averse and, therefore, reduces its operations in the futures market.

The capital market in agriculture

The need for capital manifests itself in every phase of the life of any business, from start-up to growth.[15] The agricultural enterprise, by its very nature, is characterized by the specificities concerning its capital compared to other types of enterprises. This need can be satisfied by resorting to the capital market, a fundamental resource for the continuity of the entrepreneurial process. Based on the sources of funding, the capital can be classified into different types:

i. ordinary and subsidized credit capital

ii. venture capital

iii. own or shareholder capital

Agricultural credit (ordinary and subsidized)

The Italian agricultural system, like the entire production system of the country, is characterized by the presence of numerous small and medium-sized enterprises, which ensure the high specialization of traditional sectors.[16] The latter, in fact, have the advantage of having less need for dimensional development than in other sectors; however, among the weaknesses identified as significant are those inherent to the financial structure. The phenomenon is quite complex, since it concerns both the mentality and the approach with which small businesses approach the financial world, and the institutions themselves, not always capable of, or rather, willing to respond adequately to the needs of the production system.[17,18] Small businesses, compared to large companies, have a higher financial debt, which is characterized by a high cost, a short-term maturity and an almost exclusive dependence on the banking system. In addition, the existence of information asymmetries hinders the need for lenders to monitor the subjects entrusted, as well as to keep their dynamics and economic-financial results under control. Based on this situation, lenders tend to protect themselves from this type of risk both through the use of collateral and through the increase in lending rates.

The result is, first of all, a high sensitivity of the small agricultural enterprise to credit policies (interest rate changes) and to monetary maneuvers (rationing). Furthermore, investments tend to be programmed and planned based on available resources, or essentially on the resources deriving from self-financing, so its thinning process often hinders the possibility of new investments. The regulatory changes that have taken place and the evolution of the international scenario should, however, contribute to radically change the relationship between bank and business. In particular, with the entry into force of the Consolidated Law on banking and credit, the regulatory framework of reference has been considerably simplified, as the affirmation of the competitive parity of all banks in the offer of credit to agriculture; it has undermined the principle of specialization of the offer and the necessary authorization for intervention in the sector. Furthermore, the object of the loan is no longer the individual project, but the entire company, since even the ancillary activities are included among those eligible for financing. The T.U. finally, it laid the foundations for a reconsideration of the role of the Interbank Guarantee Fund governed by art. 45, which aims to provide a subsidiary guarantee to credit institutions that provide financing for agriculture.

Community legislation

Before 1996, the European Commission followed a policy aimed at not combating state aid granted in the form of subsidized short-term loans to the agricultural sector, but later these have been subject to restrictions. Notwithstanding the recognition of the peculiarities of the sector and of the activities connected with it, the Commission attributes the aid intended to reduce the cost of loans to functional State aid which is expressly prohibited by the Treaty. The loans of the banking system to agriculture amounted to 38,678 billion lire in 2000, 3.9% of total loans (it was 4.4% in 1996). Between 1996 and 2000 the consistency of uses in agriculture increased by 3.1% per year, less than the total of uses which increased by 5.5% per year. As evidence of the persistent financial weakness of farms, especially cooperatives, there is still a considerable amount of bad debts, which represent 15.4% of loans (double percentage compared to the general figure). Loans beyond the short term (over 18 months) destined for agricultural enterprises amounted to 16,033 billion lire, of which 5,501 at a subsidized rate. Non-subsidized credit increased, which in 2000 represented 65.7% of loans (it was 50.2% in 1998). The share of credit absorbed by rural buildings is greatly reduced (from 47.7% to 36.7%) to the advantage of investments in machinery and equipment (from 36.7% to 48.2%), a sign of a renewed commitment to technological modernization.

Risk capital

The participation by specialized organizations in risk capital is achieved through two financing channels: venture capital and private equity. These two methods of financing consist in the use of financial resources by specialized operators in the form of equity investments or the subscription of bonds convertible into shares, for a medium-long period of time, in companies equipped with a project with high potential of growth, with the aim of obtaining a substantial capital gain through the sale of its shares. In particular, venture capital operations finance new business ventures, while private equity essentially consists of operations to support the growth and implementation of development projects for existing companies.

The risk in agriculture

In economic activities that are very exposed to external events uncontrollable by the single agent, such as agriculture, reference is usually made to "basic risk", that is, to those situations of uncertainty in which any significant deviation from normality can cause losses for the company.[19,20] The exposure to risks in agriculture is generally very high, since the harmful events that can affect it are numerous and wide.[21] In particular, among the variety of risks that the farmer must bear, the following can be identified: those related to the production process, price fluctuations, financial conditions, personal skills and the institutional context.[22,23] Exposure to risks has worsened in recent times due to a series of phenomena, including the progressive and gradual abandonment of EU price support policies, following the 1992 McSharry reform of the CAP, which resulted in an increase in corporate exposure to market fluctuations.[24] These risk factors, combined with a very widespread situation among agricultural enterprises with little or no risk coverage through control tools, have made the agricultural system unattractive on the part of capital markets. This problem, combined with the need to rethink the operational mechanisms of the CAP, is generating considerable interest in new agricultural policy instruments, in particular for insurance schemes in the agricultural policies of other countries.[25] In the insurance field, the reference experience is that of the USA and Canada, countries that have introduced and developed forms of insurance interventions which are now referred to in order to evaluate the possibility of adopting similar solutions in the European Union. Leaving aside the risk of production (or yield) and revenue, in the discussion that follows we will focus on the third of the three most important risks in the agricultural field, that is, on price risk; in particular, after having briefly defined it, attention will be focused on the most widely used hedging techniques at international level, that is the use of futures, leaving the task of treating their use also as an instrument of economic growth for the "Countries in way of development.[26]

The price risk

Price risk originates from an unexpected change in the market prices of produced goods and production factors, which is technically defined as price volatility.[27] The risks of price fluctuations result from the (only partially predictable) trend of international markets, changes in economic policy choices (commercial agreements, changes in price support, etc.), changes in the preferences[28] as well as to a multitude of largely unpredictable factors, since in fact economic operators are sensitive to a myriad of information and in reality the price of a good is hardly established by the pure encounter between supply and demand.[29] In agriculture, in particular, this risk is quite significant, for reasons including:

1. The long time period that separates the phase of starting production and placing the product on the market.[33]
2. The correlation between price trends and yield trends (at company level the volumes produced by the individual entrepreneur cannot affect the market price, but at the aggregate level the price trend is generally negatively correlated with the yield trend).

Modern price risk hedging techniques

In this context, traditional insurance coverage systems show evident limits, which are confirmed on the one hand by the losses accumulated by the insurance companies and on the other by the continuous increase in premiums, with the consequence of causing a progressive restriction of the insurance market.[30] As noted previously, the current trend in Italy, and in Europe in general, is to refer to the business risk management tools available to American farmers, who with the Agricultural Law[31] of 1996 can choose from a wide range of instruments.[32] In the specific case of price risk, the goal of producers is, in general, to protect themselves from possible price reductions and to do this, the tools available to American farmers are:

i. sales for deferred delivery;
ii. futures contracts (or sales in forward markets);
iii. the pricing options.

Forward sales take the form of entering into an agreement with a processor or intermediary for the sale of a quantity of product at a certain price on a fixed date.[33] Its effect is not very different from that obtainable from taking a position on the futures markets by selling futures contracts on the product: the producer gains if at the time of sale of the product the price on the physical market of the good has decreased, he loses if this instead, he grew up.[34] A futures contract is, in fact, an agreement entered into between two operators for the purchase or sale of an asset (defined as "underlying") at a future date, for a certain price. The buyer (buyer) takes a position that is defined "long" (long position), while the position taken by the seller is defined "short" (short position). Finally, there are "options", which guarantee the producer the right to sell (put option) a future contract at a certain price, called the strike price, or to buy it (call option). The producer,

of course, will exercise the option, selling the futures contract, only if the market price falls below the strike price, otherwise, in fact, it will be cheaper for him to sell the product on the physical market of the asset.[35]

However, it should be emphasized that despite much of the disclosure efforts made by the US in the field of price risk management are aimed at illustrating to producers how to use futures and options, there are few producers who practice hedging with futures. They buy options, because the opportunities lost in cases where product prices rise rather than fall discourage producers themselves. Furthermore, it can be added that the deferred sale could have highly negative consequences for the producer in the hypothesis in which he finds himself selling his product at a rising price and due to a reduction in the expected yield he has no product to deliver: he would be forced to buy the product on the market at a higher price to comply with its contractual obligations. With forward contracts (futures) the risk is lower, as it is possible to liquidate during the campaign the positions exceeding the expected yield, while with the purchase of a put option the maximum that the producer can lose is the price of the option which, obviously, is not exercised if the market price is higher than that of the option.[36]

The analysis carried out shows that futures and options are, albeit with their limits, the main instruments for hedging the price risk, even if in a multi-risk logic they do not allow the coverage of the return risk, and it is precisely for this reason, forms of joint coverage of the two risks are being implemented in the US through revenue insurance programs. These programs determine the revenue as a product between yield and price, guaranteeing, by virtue of the offsets between the two variables, significant reductions in the insurance cost compared to the separate coverage of the two sources of risk.[37]

The Italian context

Given that the experience on futures markets is fundamentally North American, the need has arisen to understand whether some of the typical Italian products can allow, even in the Italian structural situation, the creation of financial instruments based on an agricultural product.

It is usually thought that in order to place a product in a futures market, the product itself must have very specific qualities. Some of these are endogenous, such as:

a. high quantity produced and marketed;

b. high price volatility;

c. product standardization;

d. storage capacity.

e. Other characteristics are exogenous:

f. market with a large number of operators;

g. sensitivity to risk;

h. speculative interest.

Not all these prerequisites exist in the Italian agricultural market, however some regions, such as Emilia - Romagna, have set up projects which illustrate the concrete possibility of setting up futures markets for some typical products, while not fully respecting all the above conditions. In particular, it highlights the fact that the financial engineering instrument does not necessarily have to be used in a speculative way, hence the consequence that the high marketed quantity of a product is not a real requirement: the real condition is, rather, the need for high demand. Product standardization is another false issue. The product must not be homogeneous and standard, but of quality, such as to satisfy its user. The real standardization problem concerns procedures.

These observations allow us to reformulate the requirements for a product for the construction of financial instruments that rely on it:

i. product quality;

ii. product requested by economic actors;

iii. price volatility;

iv. interest from producers.

If these pre - requisites exist it is possible to move on to the next step, which is to outline the tool. To do this, however, it is necessary to define the type of risk that you want to control. If the problem is price risk then you can think of a real future and therefore it is necessary to formalize a market more precisely.

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None

Conflicts of interest

The authors declare no conflicts of interest.

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