Hedge Transactions on the Stock Exchange

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ABSTRACT  Hedge operations are particular stock market operations through which stock market traders, producers, intermediaries intend to cover the unfavorable outcome of the goods price on the cash market (physical). Price hedging by hedge operations is possible with the similarity and possible convergence between cash and futures prices. Since both markets are influenced by changes in the same general factors of market, prices tend to move in the same directions, but not necessarily with the same magnitude. The exposure rank to price risk which can be minimized depends on the correlation rank between the cash price changes and the future prices variations. Hedgers manage to decrease losses by using this type of transaction.

KEY WORDS  Risk coverage, long hedge, short hedge, cash market, futures market

JEL CODES  O16, P45

1. Introduction

Stocks markets are representative markets, which helps to form in the economy the reference price of the trade goods. This feature results from the factors correlation such as supply-demand report on cash or futures markets, the recent evolution of prices in these markets, the development of an important social and political events, that may affect in some way or other the attitude of the market participants. This feature was the basis of negative opinions made by consumers, producers and even politicians on the evolutions of stock prices which, in their opinion does not reflect reality and adversely affect their daily life or business. There is a great nonsense in their words, because the stock market as institutions is simply a barometer, it reflects the evolution of prices according to supply and demand, and also the interaction between sales and purchase orders which reach the stock market.

Their role is extremely important because the stock exchange developing has led to the commercial changes growth based on liberalizations trade, capital movements and innovations developed by grants (standardized new products, new operations etc.). Thus, trade liberalization was one of the premises development stock exchanges. Also, liberalization of capital movements was important in the development of stock markets. Without financing freedom of international transactions is difficult to have an international trade growth in raw materials. This freedom has supported the stock carry out stock exchange operations.

By widening the offered term contracts range, stock markets responsible allowed new operators to appear (banks, financial and credit institutions, investment companies etc.), operators that would draw customers to interpose and use these new opportunities.

Stock markets are voluntary grading tools in risk exposure. By initiating hedging transactions, the initiators want to protect their own goods against the prices oscillation on the
“ash” market... As a rule, the hedgers can be farmers, production processing companies and also marketing.

When they want to protect the products obtained and to cover the costs of storing the material until delivery (term markets or market “cash”), the farmers performs hedge operations; when they want to ensure themselves that there will be a buyer for the future production or when they want to set a sale price for this production.

Production companies can take advantage arising from the performance of a simple hedging or an integrated one in many situations when they want to protect themselves against rising commodity prices and also setting the selling prices for the obtained production.

Generally, traders use only simple hedging strategies because they are not involved in the production process and therefore are not affected by food oscillation prices; most cases when such companies use hedging are: they have to make a delivery (exports) in the future and wants to ensure that it will be some buying products before the desired price delivery; it has to perform an import and wants to provide an alternative for not delivered on time products by buying a number of futures contracts representing the equivalent of imported goods.

In coating operations, the operator follows to ensure the contractual balance in a different operation, through the mechanism of the futures market. For example, in agricultural goods hedging case, the operator wants to “protect” the commercial contract price, so the profit margins can be maintained in this contract, regardless of price changes, changes that may occur between the emission time and the moment when is going to be performed on the physical market.

Hedge operations can be used by farmers and grain producers to protect themselves against unwanted price oscillations.

Suppose the farmer who will sell finished goods, wants to have ensured price for his goods. To achieve these, he will complete a selling on term contract for his future obtained production.

Hedging transactions are distinguished from speculation because if’s hedging position taken on the stock exchange is complementary to the positions held on the physical market, so the operation of the grant is covered with freight. Therefore it combines a hedging contract freight operation often made outside the exchange, a futures contract, which is typical of stock.

In this case, may make a sale on the stock exchange, long before they have merchandise (for example, even after making sowings). This sale is through stock actually starting a hedge (a hedge or short).

Because futures and cash market prices evolve generally in parallel with each other, if the lower cash market prices, futures prices will decrease. The lowest price that the farmer receives on the cash market, the actual selling cereals, will be offset or compensated by a gain approximately equal, when the futures contracts (which were sold at sowing) will be purchased at a price low. Therefore, the grain producer will get the final price wanted to seed and there will be insignificant or no losses.

Futures market can also be used to obtain an income from storing a commodity to be sold later. By calculating the difference between the price of the futures contract with the closest maturity and the one with distant maturity, a cargo owner can check up the market opportunities, respective the additional revenue obtained from the storage of goods in present and future sale.

Essentially, hedging is the adoption of a stock exchange future position approximately equal, but opposite an existing or anticipated cash position at the contracting stock.
Thus, the risk of unfavorable evolution of prices for hedgers is transferred to a third party, in principle the speculator, whose purpose is just to take a risk in hope of obtaining a profit from favorable trends in the price.

When hedging, position taken on the stock exchange is complementary to the positions obtained on the physical market (cash), thus combining a hedging contract with freight (cash market ended) with a futures contract (signed in scholarship).

2. Types of hedge operations

Hedging is an operation made on the stock exchange to cover the hedge physical market transactions (increase or decrease the physical market price/actual).

There are two types of hedge:
- Long hedge – purchase hedge
- Short hedge – selling hedge

The hedge can be:
- simple
- with spacing – with parallel evolution
  - with unparallel evolution

The simple hedge means that the physical market price equals the stock market price (Pc = PFT).

The hedge with spacing means that the physical market price equals the price of the stock market (Pc = PFT).

The hedge with spacing with parallel evolution implies that the physical market price changes as price changes as the stock market, but are not equal (≠ Pc PFT). In this situation is made the total coverage of risk.

• The Short hedge or the selling Hedge

End of the stock exchange is a sale for a commodity (the quantity of goods a price equal to its owner wants to keep) to cover the risk of decreased physical market price of this commodity. Hedgers have loads or they expect to achieve it.

The sale will close within the quotation at the time of its signing. Subsequently, the entire amount sold will be redeemed at the exchange by one or more contracts for fractional amounts depending on the practical needs.

The short hedge is achieved by an operator at a time, holds the stock or commodity purchases (silo owner) or expected to produce a quantity of physical goods (farmer) and at the same time or subsequently, selling an equivalent number of futures. Hedgers’ objective here is to protect the value of the stock or commodity future production against a decline in the market price.

The short hedge protects:

- a spot position (immediate sale, with mandatory delivery of goods) sales expected (e.g. raw materials manufacturer)
  - or
- a forward position - existing to be purchased (trader)
  At risk of future decline in its price.
**Case study**

On the 1st of July a manufacturer of soybean production expected to reach 10,000 Bushel and that the soybean crop will be available for sale in late October.

On the 1st of July the cash price and futures price is equal to 6.5 is $/Bushel (quotiation November soybean futures contract is 6.5 $/bu).

The manufacturer makes its calculations of return and considers that the price is satisfactory, so in the following months to October he must ensure against the risk of declining soybean prices (in this case he loses the profit and no longer can he cover the expenses).

Therefore, on the 1st of June he goes to scholarship and completes an action of short hedge - contract for the sale of 10,000 Bushel of soybeans to 6.5 $/Bushel.

1. **On the 20th of October Pc = PFT = $ 5.75/Bushel**
   - **a) market (cash) physical.** The price went down because of the large existing supply at harvest. Please register the manufacturer from selling at the production loss of $ 0.75/bu x 10,000 = $ 7,500.
   - **b) stock market (futures) -** makes offsetting, or contract to purchase 10,000 Bushel of soybeans at $ 5.75/Bushel.

Currently has 2 contracts Clearing House:

- 1.07 Bushel 10,000 contract for the sale of soybeans to 6.5 $/bu
- 20.10 Bushel contract to purchase 10,000 of soybeans to $ 5.75/bu

=> In compensation for the two positions resulting profit of $ 0.75/bu x 10,000 Bushel = profit $ 7,500.

But linking the two markets will result total loss coverage.

2. **On the 20th of October Pc = PFT = 6, 9$/Bushel**
   - **a) Physical market.** The price went up because of the large request existing. The producer registered an income from selling the production of 0, 4$/bu x 10,000 = 4.000$.
   - **b) The Stock market -** offsetting or purchase contract of 10,000 Bushel of soybeans to 6.9 $/bu.

Currently it has 2 contracts at Clearing House:

- 1.07 Bushel 10,000 contract for the sale of soybeans to 6.5 $/bu
- 20.10 Bushel contract to purchase 10,000 of soybeans to 6.9 $/bu

=> The offset loss of 0.4 $/bu Bushel x 10,000 = $ 4,000 loss.

But linking the two markets it results the total loss coverage.

<table>
<thead>
<tr>
<th>Date</th>
<th>Physical market (cash)</th>
<th>Stock market (futures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st of July</td>
<td>The manufacturer estimated that the harvest to reach 10,000 Bushel Soy. Its selling price at harvest must be of 6.5 $/Bushel</td>
<td>Ends short hedge - 10,000 sales contract $ 6.5 Bushel Soybean/ Bushel</td>
</tr>
<tr>
<td>20th of October</td>
<td>The cash price reached $ 5.75/Bushel. The manufacturer sells the crop at $ 5.75/Bushel on spot contract</td>
<td>Futures price reached $ 5.75/ Bushel Liquidated short position in a stock purchase agreement at $ 5.75/Bushel</td>
</tr>
<tr>
<td>Brut result</td>
<td>Registers a loss of: (6,5–5,75)$ x 10,000 bu = 7500 $</td>
<td>Registers a profit of: (6,5–5,75)$ x 10,000 bu = 7500 $</td>
</tr>
<tr>
<td>Net result</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Table 1. The result of the soybeans producer
**Conclusion:** the result of short hedge operations can be calculated as the difference between $B_i$ and $B_D$.

Where:

$B_i$ - the closing operation

$B_D$ – the opening operation

<table>
<thead>
<tr>
<th>SHORT HEDGE</th>
<th>The result = $B_i - B_D$</th>
</tr>
</thead>
<tbody>
<tr>
<td>$B_D &lt; B_i$</td>
<td>PROFIT (+)</td>
</tr>
<tr>
<td>$B_D = B_i$</td>
<td>0</td>
</tr>
<tr>
<td>$B_D &gt; B_i$</td>
<td>LOSS (−)</td>
</tr>
</tbody>
</table>

It may be noted that the base - the difference between the cash price and futures price can indicate meaning of hedge transaction outcome, where the price developments of the two markets is not parallel.

- **Long hedge or purchase hedging**
  
  The end of the stock exchange is a purchase contract for a commodity (equivalent to the quantity to buy time on the physical market and the market to resell all natural in the same state or in a transformed state) with the purpose of hedging increase the price of this commodity physical market.

  The amount purchased on the stock exchange will be resold whole or split in quotation days to deadline, the settlement account of the purchase contract obligations.

  **Hedgers** don’t have merchandise, but intends to purchase at a later date.

  **The operation of long hedge protects:**

  - purchase advance position spot (industrialist, processor of raw materials);

  - Or

  Existing forward sales position (dealer)

  At risk of future price increases.

  Often the selling prices are set for months before buying the product which will be delivered or raw materials needed in production process. Selling price thus established is based on projected costs and desired profit margin. If by the time in which the cash purchase goods prices fell beyond expectations, it can result in additional profits. But if costs rise above expectations, can erode profits and may even result in losses. The seller has several options, each with a lower risk.

**Case study**

A miller is committed in February to deliver a baker in a quantity of 5000 t meal price of $250/t. This price is based on the physical market price of wheat $180/t in order to achieve the required 5000 t 6000 t wheat flour.

Flour price ($250/t) = Price wheat ($180/t) + processing + Che Profit
Miller, to avoid the losses resulted from the price fluctuations of the wheat (wheat price growth); enter into a contract to hedge long stock, or contract to purchase 6000 tons wheat at $180/t with maturity in May

1. On the 20th of May Pc=Pft=190$/t.
   a) Physical market. The price has increased due to high demand existing in May. Please register in buying flour miller at a higher price a 10 $/t x 6.000 = $ 60,000
   b) Stock market – makes offsetting, meaning a sale contract of 6000 tons of wheat at 190$/t.

In this moment have 2 contracts at Clearing House:
- 1.02 contract to purchase 6000 t wheat to 180 $/t
- 20.5 contract for the sale of 6000 t wheat to 190 $/t

=> The profit off $ 10/t = tx 6000 $ 6000 profit.
But linking the two markets resulting total loss coverage

2. On the 20th of May Pc=Pft=170$/t.
   a) Physical market decreased due to high offer price on the market. The miller registers a gain for buying of $ 10/t x 6000 = $ 6000.
   b) Stock market – makes offsetting, meaning a sale contract of 6000 tons of wheat at 170$/t.

In this moment have 2 contracts at Clearing House:
- 1.02 contract to purchase 6000 t wheat to 180 $/t
- 20.5 contract for the sale of 6000 t wheat to 170 $/t

=> The loss off 10$/t x 6.000 t = loss 6.000$.
But linking the two markets resulting total loss coverage.

Table 3. The result of the soybeans producer

<table>
<thead>
<tr>
<th>Date</th>
<th>Physical market (cash)</th>
<th>Stock market (futures)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st of February</td>
<td>Miller signs with the baker the sale of flour with the price of $ 250/t, taking into account the price of wheat of $ 180/t</td>
<td>Signs a long hedge – purchase contract of 6.000 tons of wheat at 180 $/t</td>
</tr>
<tr>
<td>20th of May</td>
<td>The cash price of wheat reached $ 190/t Miller sells flour at $ 250/t on the spot contract, but buying more expensive wheat</td>
<td>Futures price of wheat reached at 190 $/t It ends the long position from the stock with a sale contract at 190 $/t</td>
</tr>
<tr>
<td>Brut result</td>
<td>Registers a loss of: (190-180)$ x 6.000 tone = 60000 $</td>
<td>Registers a profit of: (190-180)$ x 6.000 tones = 60000 $</td>
</tr>
<tr>
<td>Net result</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Conclusion: the result of a long hedge operation can be calculated as the difference between $B_D$ and $B_I$.

Where:
$B_I$ - Closing operation
$B_D$ – Opening operation
It can be noted that the base – the difference between the cash price and the futures price can indicate the hedge transaction outcome, where the price trends are not parallel to the two markets.

If the futures position is liquidated when the basis is the same as the coating operation at the start of hedging, the hedge is considered perfect. The cash transaction gain or loss is completely offset by the loss or gain on the futures position.

3. Conclusions

Hedging both sales and purchase have the main objective pursued by the controller is to cover and protect against adverse price changes. However, if the price moves in favor hedgers site, then the profit made on the cash position will be compensated (canceled) the loss suffered in futures position that is opposite to that cash.

Selective hedging is entered and maintained on the basis of expected direction of movement of cash and futures prices. For this reason, the selective hedgers will not give such importance of the delivery stipulated in the futures contract, if they notice an excessive distortion of prices he can even change the delivery month of the contract or transfer to another exchange hedging of goods which could guarantee a win higher (due to favorable base that futures market).

If a market is "normal", there are three possibilities, in terms of cash and futures price movements: both price increases, both prices decrease or increase cash and futures prices lower. But perfect hedges are unlikely because cash and futures prices vary not identical.

Each market can have its own seasonal pattern, for local cash prices are affected by market factors unique intrinsic to that region. To estimate the model you can follow the evolution of base, a model followed hedgers to compare over time the local cash price, futures price for May delivery on bearing hedging. Comparison of existing relationships over time between the two prices is familiar with the relationship hedgers’ cash - futures usual. Thus it can lead to a favorable base level of entry or exit the market.

The advantages of the hedge transactions:
- increasing the flexibility of firms in manufacturing, storage, distribution and marketing of its products. Manufacturers, retailers and end users that have the opportunity to benefit from futures prices attractive and strategies to adapt quickly to changing market conditions;
- doing the cover, a company can reduce costs;
- A hedge can improve profit margins by reducing capital requirements and funds can be allocated to the production process. Transactions using futures to cover ~ future needs, a company avoids large capital assets in the construction of storage facilities and maintenance costs and preserving physical goods until it is needed in the future;
- maintain a hedge position may increase the chances to benefit from favorable financing.
conditions. Hedging could be useful in planning some more effective decisions, giving the operator greater freedom of action, both costs and prices can be better estimated. Hedgers can benefit not only of a favorable trend in the base, but also from short-term disparities between futures prices. Hedging involves a series of decisions that should be carefully evaluated to effectively reduce the risk exposure and provide opportunities to gain from changes in price or base. The first aspect is the decision whether it is worth the risk to be covered by hedging. The risk of an uncovered position can be quantified using the expected price changes and occurrence of this variation in the cost comparison's hedging and risk tolerance to the operator. Hedging costs include the commissions' stock, the opportunity costs associated to the sum of unrealized interest necessary for trading, the financial loss resulting from an unfavorable price or base and anticipated difference between the futures price to initiate the transaction desired by the company, and the effective price.

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