

II) Forward Pricing and Risk Transfer

Cash market participants are price takers.

Futures markets allow the possibility of forward pricing. Forward pricing or hedging allows decision makers pricing flexibility.

A futures market transaction is a temporary substitute for a cash market transaction. (So does trading futures change the nature of the eminent cash market transaction?)

Pricing becomes a decision.

Hedgers need to learn how to make good pricing decisions and need to recognize good decisions can result in bad outcomes.

There are two facts about cash and futures markets which make hedging effective.

1) Cash and futures prices respond to the forces of supply and demand such that the two markets move together.

Cash commodities and futures contracts are assets the value of which moves in the same direction. Therefore, an opposite position in the futures market will offset changes in cash asset values.

2) As the futures contract approaches the expiration date, the cash and futures prices will converge to a predictable difference. The difference is called:

basis = cash – futures.

This means that any futures prices can be converted to something that looks like cash market prices using: futures + basis = cash.

After working the examples, make sure you understand what is meant by “effective.”

Perfect Conservative Hedge Example – Corn producer

ex) Falling prices

<i>Date</i>	<i>Cash</i>	<i>Futures</i>	<i>Basis</i>
<i>6/1</i>	<i>Forward Price = Futures + Basis</i>	<i>DEC Corn @ \$5.00/bu.</i>	<i>+0.10 (expected)</i>
	<i>BE Price = \$3.50/bu.</i>		
<i>11/1</i>	<i>Sell cash corn @ \$</i>	<i>DEC Corn @ \$4.00/bu.</i>	<i>+0.10 (actual)</i>
		<i>Gain/Loss = \$</i>	

Net Price = Cash Price + Gain or Loss in Futures

ex) Falling prices (& this is the 2023, 2018, & 2016 good outcome)

Date	Cash	Futures	Basis
6/1	Forward Price = Futures + Basis \$5.10 = 5.00 + 0.10 BE Price = \$3.50/bu.	DEC Corn @ \$5.00/bu. Sell.	+0.10 (expected)
11/1	Sell cash corn @ \$4.10/bu.	DEC Corn @ \$4.00/bu. Buy. Gain/Loss = +\$1.00/bu.	+0.10 (actual)

Net Price = Cash Price + Gain or Loss in Futures
\$5.10/bu. = 4.10 + 1.00

T-Account Schematic

<i>Date</i>	<i>Cash</i>	<i>Futures</i>	<i>Basis</i>
1) <i>Decision period</i>	Forward Price = Futures + Basis 4) <i>Opportunity</i>	3) <i>Futures price</i> 5) <i>Futures action – temporary substitute for cash action</i>	2) <u><i>expected basis in outcome period</i></u>
2) <i>Outcome period</i>	6) <i>Cash action</i>	6) <i>Futures outcome</i> 7) <i>Gain/Loss</i>	6) <u><i>actual basis in outcome period</i></u>

8) Net Price = Cash Price + Gain or Loss in Futures

(Learn or memorize – I don't care which – just know how to use them. Know, know, know the sequence.)

Perfect Conservative Hedge Example – Corn producer

ex) Rising prices

<i>Date</i>	<i>Cash</i>	<i>Futures</i>	<i>Basis</i>
<i>6/1</i>	<i>Forward Price = Futures + Basis</i> <i>\$5.10 = 5.00 + 0.10</i> <i>BE Price = \$3.50/bu.</i>	<i>DEC Corn @ \$5.00/bu. Sell.</i>	<i>+0.10 (expected)</i>
<i>11/1</i>	<i>Sell cash corn @ \$</i>	<i>DEC Corn @ \$6.75/bu. Buy.</i> <i>Gain/Loss =</i>	<i>+0.10 (actual)</i>

Net Price = Cash Price + Gain or Loss in Futures

ex) Rising prices (& this is the 2022, 2012 & 2010 bad outcomes)

Date	Cash	Futures	Basis
6/1	Forward Price = Futures + Basis \$5.10 = 5.00 + 0.10 BE Price = \$3.50/bu.	DEC Corn @ \$5.00/bu. Sell.	+0.10 (expected)
11/1	Sell cash corn @ \$6.85/bu.	DEC Corn @ \$6.75/bu. Buy. Gain/Loss = -\$1.75/bu.	+0.10 (actual)

Net Price = Cash Price + Gain or Loss in Futures
\$5.10/bu. = 6.85 - 1.75

Choosing and realizing a forward price is what is meant by effective forward pricing.

Not price enhancement, not the best price, not the highest price, not above costs of production, not-not-not, there are a lot of what it's not...

Hedging works because losses in one market are offset by gains in the other market.

This example also illustrates risk transfer. The risk of a price change is transferred to (most likely) a speculator. The hedger is “protected” against all price changes.

Producers are still price takers but when they take price is flexible and forward pricing decisions become an opportunity.

<i>forward pricing window (months)</i>	<i>price taking (day)</i>	<i>forward pricing window (months)</i>	<i>price taking (day)</i>
	<i>harvest</i>		<i>harvest</i>

Example) What is JUL24 KC wheat trading for? What about DEC24 & DEC25 corn?

Corn producer example,

decision to hedge: falling prices → good or bad?

decision to hedge: rising prices → good or bad?

Example) Former student with \$650k of margin calls in 1994. ($2.08 = 308.0/148.2$)

Example) Suppose the corn producer in our examples sold 10 contracts – 50,000 bu. – and suppose the market rallied at some point to where the producer was losing \$2/bu. How much financing would be needed? From where would that money come?

Margin calls, margin calls, margin calls... What are you going to do when you get margin calls? (What is your collateral?)

What about using forward contracts? Usually not marked-to-market. (But what about credit risk?)

Corn producer example,

decision to hedge: falling prices → good or bad?

decision to hedge: rising prices → good or bad?

Are you thinking DECISION or OUTCOME?

Was the decision good or bad given the information available when the decision was made? (Remember the price discovery concept...)

What information and management processes would it take for you to make good forward pricing decisions?

<i>Break-even Price & Costs of Production Basis Information Access to Credit Capital Budgeting – Risk Assessment & Target RoR or ROI</i>	<i>Market Outlook? Price Forecasts? Probabilistic Forecasts? (Crystal ball?)</i>
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Where does this information go in the Cash Flow Statement?

	<i>Jan</i>	<i>Feb</i>	<i>Mar</i>	<i>Apr</i>	<i>May</i>	<i>Jun</i>	<i>Jul</i>	<i>Aug</i>	<i>Sep</i>	<i>Oct</i>	<i>Nov</i>	<i>Dec</i>	<i>Total</i>
Beginning Cash Balance													
Operating Receipts													
Grain	\$												
Livestock	\$												
Futures G/L	\$												
Capital Receipts													
...	\$												
Total Cash Inflow													
Operating Expenses													
...	\$												
Debt Payments													
...	\$												
Total Cash Outflow													
Ending Cash Balance													

**What is the date when the decision was made and when is the outcome realized?
(Your banker is going to require a Projected Cash Flow...)**

Where does this information go in the Balance Sheet?

ASSETS		LIABILITIES	
Current Assets		Current Liabilities	
Cash assets	\$...	
Futures assets	\$	Futures liabilities	\$
...		...	
Capital Assets		Capital Debt	
...	\$...	\$
...	\$...	\$
Total Assets	\$\$\$	Total Liabilities	\$\$\$
EQUITY			
	\$\$\$		

And what is changing with the futures assets/liabilities?

Perfect Conservative Hedge with Options Example – Corn producer

ex) Falling prices

<i>Date</i>	<i>Cash</i>	<i>Futures</i>	<i>Basis</i>
<i>6/1</i>	<i>Forward Price Floor =</i> <i>Option Futures Price +</i> <i>Basis - Premium</i> <i>\$4.75 = 5.00 + 0.10 – 0.35</i> <i>BE Price = \$3.50/bu.</i>	<i>DEC Corn @ \$5.00/bu.</i> <i>Right to sell DEC Corn @</i> <i>\$5.00/bu. is \$0.35/bu.</i> <i>Buy option (Put).</i>	<i>+0.10</i> <i>(expected)</i>
<i>11/1</i>	<i>Sell cash corn @ \$</i>	<i>DEC Corn @ \$4.00/bu.</i> <i>Right to sell DEC Corn @</i> <i>\$5.00/bu. is \$?</i>	<i>+0.10</i> <i>(actual)</i>

Net Price = Cash Price + Gain or Loss in Options

ex) *Falling prices*

<i>Date</i>	<i>Cash</i>	<i>Futures</i>	<i>Basis</i>
<i>6/1</i>	<p><i>Forward Price Floor = Option Futures Price + Basis - Premium</i></p> <p>$\\$4.75 = 5.00 + 0.10 - 0.35$</p> <p><i>BE Price = \$3.50/bu.</i></p>	<p><i>DEC Corn @ \$5.00/bu.</i></p> <p><i>Right to sell DEC Corn @ \$5.00/bu. is \$0.35/bu.</i></p> <p><i>Buy option (Put).</i></p>	<p><i>+0.10 (expected)</i></p>
<i>11/1</i>	<p><i>Sell cash corn @ \$4.10/bu.</i></p>	<p><i>DEC Corn @ \$4.00/bu.</i></p> <p><i>Right to sell DEC Corn @ \$5.00/bu. is \$1.00/bu.</i></p> <p><i>Sell option.</i></p>	<p><i>+0.10 (actual)</i></p>

Net Price = Cash Price + Gain or Loss in Options
\$4.75/bu. = 4.10 – 0.35 + 1.00

Perfect Conservative Hedge with Options Example – Corn producer

ex) Rising prices

<i>Date</i>	<i>Cash</i>	<i>Futures</i>	<i>Basis</i>
<i>6/1</i>	<i>Forward Price Floor = Option Futures Price + Basis - Premium</i> <i>\$4.75 = 5.00 + 0.10 – 0.35</i> <i>BE Price = \$3.50/bu.</i>	<i>DEC Corn @ \$5.00/bu.</i> <i>Right to sell DEC Corn @ \$5.00/bu. is \$0.35/bu.</i> <i>Buy option (Put).</i>	<i>+0.10 (expected)</i>
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Net Price = Cash Price + Gain or Loss in Options

ex) *Rising prices*

<i>Date</i>	<i>Cash</i>	<i>Futures</i>	<i>Basis</i>
<i>6/1</i>	<p><i>Forward Price Floor = Option Futures Price + Basis - Premium</i></p> <p>$\\$4.75 = 5.00 + 0.10 - 0.35$</p> <p><i>BE Price = \$3.50/bu.</i></p>	<p><i>DEC Corn @ \$5.00/bu.</i></p> <p><i>Right to sell DEC Corn @ \$5.00/bu. is \$0.35/bu.</i></p> <p><i>Buy option (Put).</i></p>	<p><i>+0.10 (expected)</i></p>
<i>11/1</i>	<p><i>Sell cash corn @ \$6.85</i></p>	<p><i>DEC Corn @ \$6.75/bu.</i></p> <p><i>Right to sell DEC Corn @ \$5.00/bu. is \$0.00.</i></p> <p><i>Option expires worthless.</i></p>	<p><i>+0.10 (actual)</i></p>

Net Price = Cash Price + Gain or Loss in Options
 $\$6.50/\text{bu.} = 6.85 - 0.35 + 0.00$

Scenario	Cash Only	Futures Hedge	Options Hedge
Falling Prices			
Rising Prices			
Steady Prices			

First, find the prices for the different strategies under the different scenarios.

Second, determine which is the best strategy?

For a given scenario – row – which strategy – column – has the highest price?