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Using the Futures Market in Response to Low Market Prices

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Cash market hog prices have been below $20 per cwt. during late October and November, their lowest levels since the early 1970s. At these price levels, hog producers are not covering costs of production.

In this paper we discuss ways hog producers can respond to low hog prices. To do this, we first present forecasts of hog prices during 1999. Different types of producers will respond differently to low hog prices. Therefore, we divide the discussion of responses into the following categories:

1. farrow-to-finish hog producers with high debt levels,
2. farrow-to-finish hog producers with low debt levels,
3. finish hog producers,
4. hog producers with "window" contracts, and
5. producers with production contracts.

Hog Price Outlook

Table 1 shows market hog price forecasts for 1999. The column labeled "Chicago Mercantile Exchange (CME) Lean Hog Contract Price" shows price forecasts for CME lean hog futures contracts. Forecasts are given for selected months based on when a lean hog contract expires. For example, the February 1999 price of $41.18 per cwt. is for the lean hog futures contract expiring in February, and the April 1999 price of $44.13 is for the futures contract expiring in April. Forecasts are each contract's settlement price on November 11, 1998. These forecasts suggest a trend up from the December price of $34.15 per cwt. to a high of $54.80 per cwt. in August 1999.

Forecasts of cash prices are given in the "Equivalent Cash Price" column. These forecasts are based on the CME futures prices, equaling .74 times the respective month's CME futures price minus a $2 per cwt. estimated basis. Cash prices will vary across producers depending on their marketing arrangements, location, and pork quality. Hence, the equivalent cash prices should be used as a guide.

The April cash price of $30.65 per cwt. suggests that hog prices will be in the low $30 range by spring. By summer, cash prices are forecast in the high $30 range, as

indicated by the $38.15 per cwt. July 1999 equivalent cash price. These forecasts do not suggest much profit in the hog industry during 1999. However, the high $30 cash prices will cover variable costs on most operations, suggesting that cash flow pressures will ease somewhat during spring and summer of 1999.

Forecasts in table 1 give average, or expected, prices. There is a considerable range within which cash prices can fall. For example, the equivalent cash price for June is $37.59. Options prices suggest that a 90 percent range for June 1999 cash prices is $20 to $50 per cwt. In other words, 9 out 10 times the cash price in June 1999 will fall between $20 and $50, with the average being $37.59 per cwt. One out 10 times the cash price will be either below $25 or above $50. Therefore, forecasts are for low hog prices, with a significant amount of downside price risk.

Farrow-to-finish hog operations with high debt levels

Given a $2.20 per bushel corn price, feed costs are about $23 per cwt. of pork sold (see table 2 for projected costs). Other variable costs add another $11 to production costs, giving $34 of feed and other variable costs per cwt. of pork sold. At a $20 per cwt. hog price, farrow-to-finish producers have a cash shortage of $14 per cwt. of pork sold, or a $35 cash shortfall for each 250 pound market hog sold.

These losses are eroding the financial position of farrow-to-finish hog producers by depleting cash reserves, adding to operating debt, and causing difficulties in meeting debt repayment obligations. Producers with high debt levels have little cash reserves to fall back on to cover losses. As such, it is critical for these producers to receive market prices at least above variable costs. By covering variable costs, funds will be generated to cover debt repayment and other fixed obligations.

Producers have the following strategies:

Liquidate part of the sow herd. Producers can liquidate part of their sow herd by not replacing culled sows. This strategy will reduce current cash flow needs, because cash flows associated with procuring and feeding sows will be reduced. However, this strategy will reduce future cash flows. Gilts brought into the herd now will produce hogs ready to market in approximately 10 months, or in about September 1999. Forecasts suggest that cash market hog prices will be in the high $30 per cwt. range during early fall (see table 1). High $30 prices will cover variable costs on most farrow-to-finish hog operation, thus generating funds to cover fixed obligations. Given detrimental future cash flow impacts, this strategy is not advisable except for producers with severe cash flow problems who can not obtain funds to replace culled animals.

Hedge all or a portion of future hog sales by selling CME futures contracts. As shown in table 1, CME contracts can be used to lock in lean hog prices in the mid $50 range during the summer of 1999. Locking in a lean hog price in the middle $50 range is equivalent to hedging a cash price in the high $30 per cwt. price range.

Cash market prices in the high $30 range will cover variable costs on many farrow-to-finish operations. Therefore, the hedging strategy's principal advantage is that it will generate funds to meet fixed obligations. Moreover, this strategy reduces risk associated with lower hog prices.

This strategy's principal disadvantage is that it locks in prices at relatively low levels. Most producers will not generate much profit at high $30 per cwt. prices. And many producers will face losses. Moreover, this option reduces the chance of obtaining higher prices if market hog prices move up.

This strategy is well suited for producers who will be severely financially stressed if hog prices continue below $30 per cwt. into the summer of 1999. A hog producer who faces bankruptcy at continued market hog prices below $30 per cwt. should give strong consideration to this strategy. In most cases, this strategy is preferred to a partial liquidation of the sow herd; the hedging strategy preserves positive revenue less variable costs while the partial liquidation does not.

Use put options to place floors under cash prices. Producers can use put options to place a floor under prices. On November 11, 1998, a put option with a $54 strike price for June 1999 CME lean hog contract could be purchased for $3.48 per cwt. This contract will pay the if June lean hog futures contracts go below $54, guaranteeing at least a $54 per cwt. lean price. This contract essentially guarantees a cash price above $38 per cwt. Use of a put will not eliminate upward price movement, as will occur if futures contracts are used. This strategy is similar to purchasing insurance. For a $3.48 per cwt. cost, producers guarantee at least a $38 cash price.

This strategy's primary advantage is that it places a floor under hog prices. The price level will cover variable costs on many operations. This strategy's disadvantage is the cost of buying the put. This cost effectively adds to the costs of production.

Purchase or hedging feed. Currently, corn and soybean oil meal prices are at low levels. A producer can either purchase feeds now or use futures contracts to lock in prices. Use of futures contacts is more suited for producers who will have difficulty obtaining cash to buy feed. Purchasing or hedging will lock in relatively low prices. Of course, purchasing or hedging feeds eliminates the gains that may occur if corn and soybean oil meal prices move down.

Farrow-to-finish producers with low debt levels

Farrow-to-finish producers with low debt levels have the same alternative strategies as do farrow-to-finish producers with high debt levels. Hedging hog prices and locking in feed costs are responses. However, the urgency to undertake these strategies is not as great for producers with low debt levels. These producers can use their financial reserves to withstand possible continued low prices during 1999.

Finish hog producers

At a $2.20 corn price, feed costs for raising a feeder pig from 50 pounds to 250 pounds are $17.25 per cwt. of pork sold (see table 2). Other variable costs generally add $4.23 per cwt. to production costs. This gives a total of $21.58 per cwt. of feed and other variable costs.

Given these costs, table 3 shows breakeven feeder pig prices for differing per cwt. market hog prices. At a $35 market hog price, variable costs will be covered if a feeder pig is purchased for less than $33.75. All costs are covered if the feeder pig is purchased for less than $28.75.

Current reports indicate that feeder pigs can be purchased for less than $30 per head, suggesting that finishing hog production will cover variable costs. However, there is a considerable uncertainty concerning hog prices. Therefore, finish hog producers may wish to consider the following strategies:

Hedge hog production using CME futures contracts. This strategy will lock in prices that will cover variable costs. However, any potential increases in hog prices will be foregone.

Use put options to place a floor on price. Currently, put options can be used to place a floor on prices in the high $30 per cwt. live hog basis. The disadvantage of this strategy is that the cost of the put option.

Lock in feed costs. Feed costs are at relatively low levels. Therefore, purchasing feed now will assure relatively low feed costs.

Similar to farrow-to-finish producers, the need for a finish hog producer to guarantee hog and feed prices increases as their financial position becomes more tentative. If a producer can not withstand prices below $20 per cwt., the above three strategies should be used.

Producers with "window" contracts

Some producers have "window" contracts in which a floor is set on the per cwt. payment. For example, the floor could be $35 per cwt. When market hog prices go below $35 per cwt. the producer still receives $35 per cwt. for market hogs; however, the producer is accumulating debt equal to the difference between the market hog price and $35. This debt will have to be repaid once market hog prices exceed $35 per cwt.

Currently, producers with window contracts are facing less cash flow problems than producers without window contracts. However, debt accumulated during periods of low market hog prices eventually will have to be repaid. Producers with window contracts should factor in this debt repayment when making financial projections.

Producers with production contracts

Production contracts pay a fixed amount for each pig run through a facility or a fixed amount for the "space" in a facility. Producers with these production contracts largely have been sheltered from low hog prices. However, these producers have several concerns relative to the current low prices.

First, firms owning the pigs, hereafter referred to as contracting firms, may be facing financial difficulties. Because of financial difficulties, contracting firms may not refill facilities as quickly as in the past. Not refilling facilities as quickly could potentially reduce payments that producers receive. In the extreme, the contracting firm may exit the hog industry, forcing the producer to seek a new contracting firm.

Second, the producer with the production contract generally is an unsecured creditor.

A contracting firm may owe the producer back payments for pigs raised. If the contracting firm files bankruptcy, the chances of the producer receiving any back payments is low.

Summary

Above are presented responses to low market hog prices. Most of these involve using futures and put options to guarantee prices during 1999. A producer who will face serious financial difficulties if hog prices continue below $20 per cwt. should strongly these consider hedging strategies. Currently, use of these strategies will allow hedging cash, market hogs in the high $30 range. These prices will not generate much profit, but they will cover variable costs on many operations.

Table 1. Forecasts of Market Hog Prices during 1999, November 11, 1998.

Month	Chicago Mercantile Exchange (CME) Lean Hog Contract Price[1]	Equivalent Cash Price[2]
	$ per Cwt.	$ per Cwt.
December 1998	$34.15	$23.27
February 1999	41.18	28.47
April 1999	44.13	30.65
June 1999	53.50	37.59
July 1999	54.25	38.15
August 1999	54.80	38.31
October 1999	52.25	36.67
December 1999	52.10	36.55

[1] Settlement prices on November 11, 1998. The December 1998 price is the settlement price for the December 1998 contract, the February 1999 price is the settlement price for the February 1999 contract, and so on.

[2] Equals the Chicago Mercantile Exchange lean hog price times .74 minus $2.00.

Table 2. Hog Production Costs[1].

	Farrow-to-Finish Production[2]		Finish Hog Production[3]		Feeder Pig Production[4]
	Per pig[5]	Per cwt.[6]	Per pig[5]	Per cwt.[6]	Per pig[5]
Feed costs[7]	$57	$23.27	$42	$17.25	$15
Other variable costs	27	11.16	10	4.23	17
Pig costs	0	0.00	25	10.20	0
Total variable costs	$64	$34.42	$78	$31.78	$31
Fixed cost	16	6.37	5	2.04	11
Total costs	$100	$40.79	$83	$33.82	$42

[1] Adapted from 1998/99 FaRM Lab budgets, Department of Agricultural and Consumer Economics, University of Illinois.

[2] Farrow-to-finish production is a combination of feeder pig production (footnote 4) and finishing hog production (footnote 3).

[3] Raising a 50 pound feeder pig until it reaches a 250 pound market weight. Feed conversion rate is 3.35 pounds. Assumes a 2 percent death loss.

[4] Production of 50 pound feeder pigs. Assumes 2.2 litters per year and 8.49 pigs weaned per litter.

[5] Costs are stated on a per pig sold basis.

[6] Costs are stated on a per cwt. of live weight sold basis.

[7] Based on a $2.20 corn price.

Table 3. Breakeven Feeder Pig Prices for Differing Market Hog Prices[1].

Market Hog Price	Breakeven Price to Cover Variable Costs[2]	Breakeven Price to Cover Total Costs[3]
$ per cwt.	$ per pig	$ per pig
$25	$9.25	$4.25
$30	$21.50	$16.50
$35	$33.75	$28.75
$40	$46.00	$41.00
$45	$58.25	$53.75

[1] Based on purchasing a 50 pound feeder pig and selling it at 250 pounds. Death loss equals 2 percent.

[2] Variable costs are shown in table 2. Corn price equals $2.20 per bushel.

[3] Fixed costs are shown in table 2.

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