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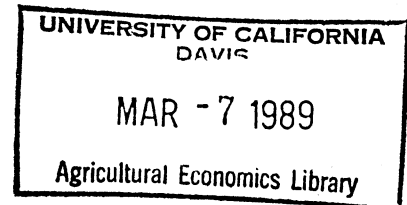
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Rough Draft
For Discussion

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MARKETING STRATEGIES: A RISK MANAGEMENT APPROACH
The 1988 Drought and Its Implication

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MSU

1988

Risk

Marketing Strategies: From a Risk Management Perspective

A drought like the one we are having in 1988 gives us a teachable moment that we shouldn't pass up. We will have a chance over the next year to teach both our clientele and ourselves a lot about RISK MANAGEMENT. Within the area of risk management this talk will focus in on the role that pricing mechanisms can play.

Marketing strategies for farmers include several categories. Ikerd puts them into four classifications; product decisions, methods decisions, pricing decisions, and merchandizing decisions. Today's talk will concentrate on pricing strategies, this is not to downplay the other areas of marketing, but rather to allow us to talk about our latest interests.

Now we could talk about either pricing strategies in general which might apply to a year such as 1988 or we could talk about how an individual should go about developing a pricing strategy. While I will do some of both, I will spend more time on the latter.

For this discussion a pricing strategy will be defined as a combination of the various pricing mechanisms used to price a given or an expected amount of a commodity. For example, a pricing strategy may be made up of a portfolio where some percent is hedged, some percent is forward contracted, some percent is protected with options, and the rest will be sold for the market price.

In a broad sense pricing strategies can have one of two objectives, although they don't have to be mutually exclusive, one objective would be a price enhancement strategy and the other would be to use a portfolio of pricing mechanisms to meet some risk management objectives. In general a price enhancement strategy assumes an inefficient market, or in other words, you know some information, such as a market pattern, that the market does not take into account. If you assume an efficient market, or a market you don't feel you can out perform, then a risk management approach is necessary. There has been several studies done on this topic of market efficiency and there is some evidence of both. One could hypothesis that a market that is generally efficient may overshoot in both directions in a year like 1988 and there may be opportunities to use both the risk management and price enhancement approaches.

Although there has been some notable exceptions, Ikerd and Anderson, King and Black, and Baldwin for example, we would argue most marketing specialist's have leaned toward using the pricing mechanisms for price enhancement tools versus risk management tools in a whole farm setting. Typically marketing specialist have poured over the data and tried to establish patterns, trends, and rules of thumb that may give a producer a jump on the market on average. Our targeting in on developing pricing

strategies based on risk management objectives is not to downplay these price enhancement efforts, but rather to tackle what we feel is the alternative pricing mechanisms strong suite, to help manage risk.

Let's think for a bit what the use of pricing mechanisms or alternatives really do for a farmer or rancher. For a first cut let's just consider price risk. Basically a producer faces a range of possible prices with various weights of each occurring, or in other words a price probability distribution. What the various pricing mechanisms do is change the shape of the price distribution a producer faces. In varying degrees the different pricing tools cut off part of the downside price risk and at the same time cut off some of the upside potential. By using pricing mechanisms a producer changes the risk they face. An example of how the various pricing alternatives change the price distribution faced is attached.

The next step in the puzzle is to briefly describe how we can get a handle on how much risk a producer can accept and how much risk a producer is willing to take. The only way we know how to get on top of this is for each individual farmer to study and be familiar with their financial situation. In this way they will know just how much the market price risk can change their financial situation and from that deduce whether or not they can/want to self insure, price in the cash market, or pass some of the risk to the market. At this point it becomes clear that each individual operation needs to develop a pricing strategy that fits their own particular abilities and preferences.

In order to develop a pricing strategy in a risk management framework producer's will not only have to have the farm financial and cost records in good order, but will also have to have farm yield distributions and realistic market price probabilities available. It will also be necessary to have a handle on the correlations between the farm yields and market prices. Remember the goal in risk management is to control net income risk (or ending net worth) and not just price risk.

A year like 1988 reminds us how much yields affect income. Many times producers appear to discount the poor yield years in making their decisions or else they have become accustomed to Congress coming to the rescue. A pricing strategy alone has the potential to increase income risk, especially if there is a strong negative correlation between a farms yields and the market price. This shows how it may be necessary to combine tools, such as pricing mechanisms and crop insurance, to really attack the risk management problem. It is also important to know the yield distribution in order to know how much and/or which price mechanism to use at various points in the planning horizon. This year is an example of how we should limit our early sales or use a put option in order to protect ourselves from having to deliver something we don't have or receive large margin calls.

Having a realistic (usable) price probability forecast is critical to putting together a pricing strategy that fits a farm family's risk management goals. We feel that a producer needs to see the whole distribution of risk they face versus either a point forecast or a most likely, optimistic, and pessimistic forecast, although the latter was a big step in the right direction. There are two primary reasons for wanting producer to have the whole distribution (defined as the 5% to 95% levels in a cumulative distribution). One reason is that the tails are the most interesting part in an insurance sense. We may have the capacity to self-insure over much of the range but want to protect against the big bust in either price or yield. The second reason, which relates to the first, is that the research suggests price distributions are not normal, tending to have thicker tails than exhibited by a normal distribution.

Although there is still research to be done we do now have a forecast of the markets perceived price distribution, just like the future prices forecast the markets point estimate. The option markets in essence allows the market to bid on insurance rates given the amount of risk there appears to be, and from that we can deduce the variance perceived to be in the market. Simplistically think of it this way, crop insurance premiums are calculated from the yield variances, so if we know the insurance premiums (the option premiums) we can stand the formula on the head to get the variance. At this point we can deduce some distributions which are nice for teaching, but we are leery to use them for decision making yet due to the shape of the distributions being unclear. Knowing more about the distributions is important, if we use distributions which are not accurate we could do more harm than good.

Some of you might now be saying to yourselves, are producers going to be able to learn this? My observation is the top third of our producers are not only capable, but are anxious to move on to this more advanced level. And it will be by teaching these top farmers that we will also make inroads into upgrading the remaining producers skills.

Much of the thinking in this discussion of using pricing strategies as a risk management tool has been around for quite awhile and one may wonder why it has not been used more. The reasons are one, the point above, we have not had a market generated price distribution available, and two, there are so many parts it was cumbersome to look at. But now with the option markets, the latest generations of microcomputers and the new software available we are in a strong position to move forward.

By developing software for micro's that will help calculate a market based price distributions and farm yield distributions, allows you to enter farm financial information and costs, and will allow the use of various pricing mechanisms, a producer can quickly look at various portfolios to try and determine which one

best fits the operations risk taking abilities and preferences. Using this method may not find the "optimal" strategy, but we would argue it is a good second best given you do not have to know a producers utility function.

The key to the above method is that the producer not only sees how the various pricing alternatives change the average price distribution, but also can see how it changes the forecast of the net cash flow, net worth, or the debt/asset ratio distributions of an operation. Preliminary samples show a farmer is much more attentive when there is a 10% chance of losing \$20,000 than when they only see it as a 10% chance of the price dropping a given amount. This also seems to make them more willing to give up some of the upside price potential in order to cut some of the downside risk using some portfolio of pricing tools. And that of course is the cost of all of the pricing mechanisms.

For example, let's say that upon reviewing an operation's balance sheet the banker and the producer decide that the farm cannot afford to lose more than \$10,000 in the soybean enterprise and for simplicity price is the only risk. The decision now is what combination of pricing alternatives would make up a pricing strategy that would limit the down side risk to only a 5% or less chance of losing \$10,000 or more and still give the most upside potential possible. An example is attached.

Now that we have given you our bias on how one should develop their pricing strategy, let's talk briefly about some reasonable strategies for a drought year and try to fit them into the above framework. As suggested earlier, in any year you have to be careful not to price to much to early, and then if you either think the price may drop or the price is high enough that you want to lock it in despite the possibility of a poor crop you should use either put options or perhaps forward contract and buy calls. Once you know you are in a drought year you should remember that the market usually peaks before harvest or at harvest and therefore you should consider locking in some production on summer rallies as you know more about your yields. Drought years also tend to provide pricing opportunities for the next growing season as well.

In discussing this topic with Steve Riggins at Kentucky, we could basically divide producers into three groups, those who have priced none, those who have priced more than they are going to have, and those in between. For those who have priced none, they should consider pricing some on rallies and should consider using option on some portions if they are considering pricing amounts near their expected production. For those who having priced to much, they should consider trying to buy some back on market dips. A fact sheet has just been released by USDA marketing extension on the legalities of not being able to deliver. For those in between, consider waiting to price more until you know more about your production, volatility will likely

be in the market all year and you will have opportunities to price over the next few months. Did anybody just notice that I have price enhancement tendencies too. Again, all of these strategies ought to be looked at with your balance sheet results in mind.

Date 07/29/88

RISK MANAGEMENT COMPARISONS

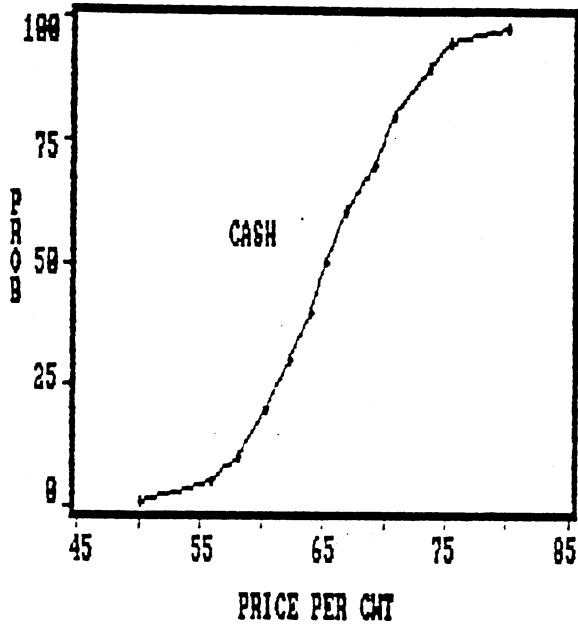
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Expected Quantity Marketed: 20000.0(cwt)

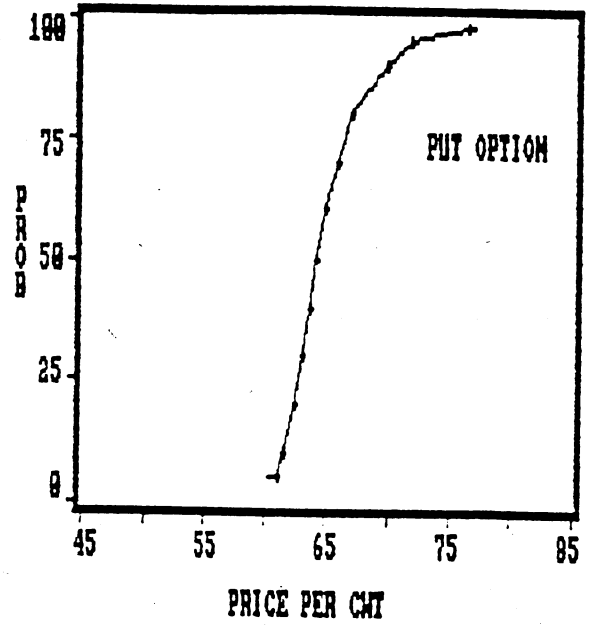
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Cash	100 %	52 %	25 %
Forward Contract	0 %	48 %	0 %
Hedge	0 %	0 %	0 %
Put Option	0 %	0 %	75 %
A Fence	0 %	0 %	0 %
CUMULATIVE TOTAL:	100 %	100 %	100 %

PROBABILITY:	PRICE	NET C.F.	PRICE	NET C.F.	PRICE	NET C.F.
5	4.68	-31455	5.79	-9157	5.75	-9951
10	5.16	-21824	6.04	-4148	5.89	-7274
20	5.81	-8896	6.38	2574	6.03	-4482
30	6.21	-796	6.59	6786	6.17	-1580
40	6.62	7371	6.80	11033	6.33	1543
50	6.97	14309	6.98	14641	6.59	6809
60	7.42	23357	7.22	19345	7.04	15857
70	7.84	31884	7.44	23780	7.47	24384
80	8.29	40832	7.67	28432	7.92	33332
90	8.99	54736	8.03	35663	8.61	47236
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WEIGHTED AVERAGE	7.05	16000	7.03	15520	6.98	14564

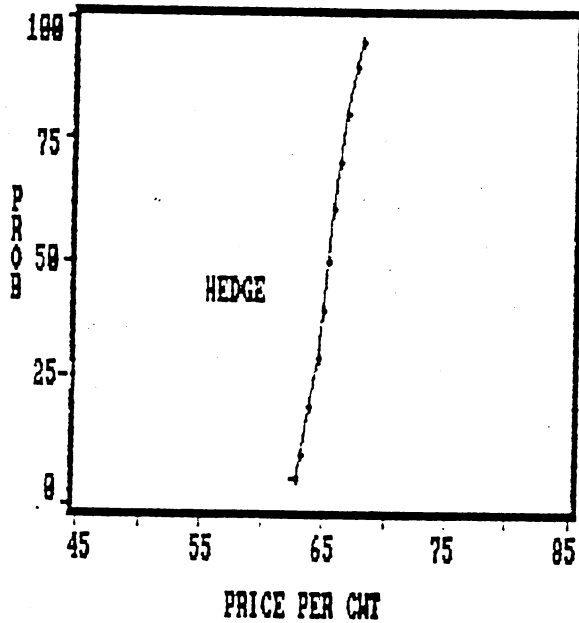
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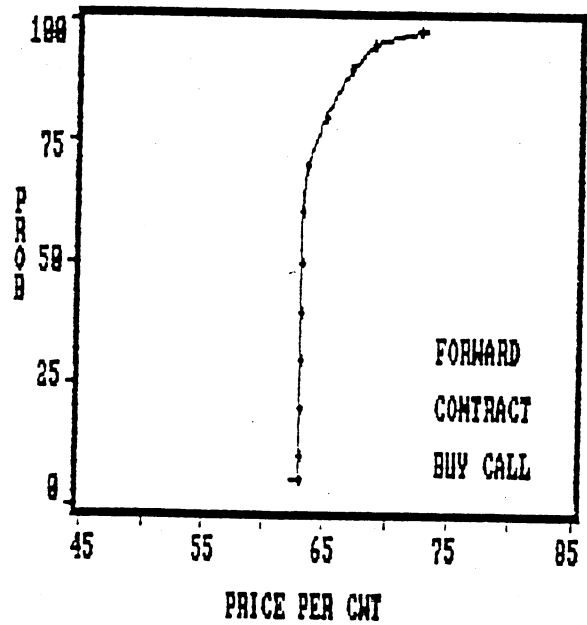
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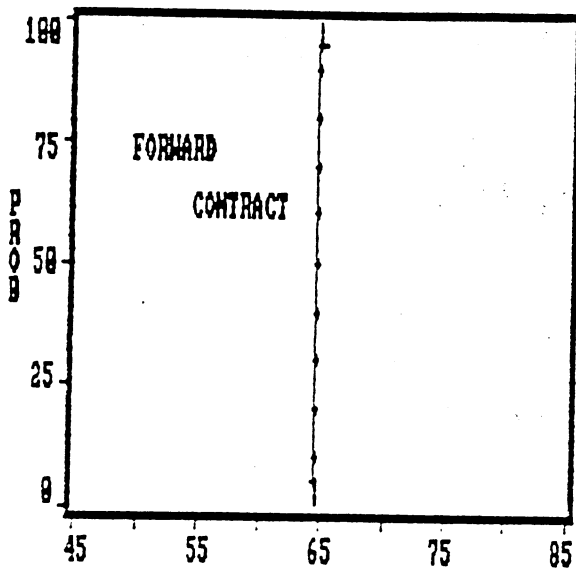
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