

# Using Seasonal Hog Price Patterns in Marketing

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Hog prices tend to move in regular price patterns throughout the year. This recurring pattern is called price seasonality. There are times of the year when hog prices almost always rise, and there are times they almost always fall. An understanding of these patterns can help hog producers make decisions about when to price, at what weights to sell, and when to forward contract. This publication describes the seasonal price pattern, shows the reliability of the pattern, illustrates how much prices change, and provides some examples of how to use seasonal price information.

The prices used in this study are Indianapolis barrow and gilt prices from 1975 through 1987. This price series is divided into bimonthly average prices, which represent the average Indianapolis price for the first and the last half of each month.

### **Why Seasonal Patterns Exist**

Hog prices are determined by factors related to the supply of hogs coming from producers and the demand for live hogs from packers. The demand for live hogs is related primarily to the demand for the various pork products by consumers. Seasonal price patterns can therefore be a result of supply seasonality or demand seasonality.

The easiest factor to quantify is the seasonality of supply as shown in Table 1. Sow farrowings are at the lowest level of the year during the winter (December-February) when farrowings have averaged only 89 percent of the annual average. In addition, pigs weaned per litter are lowest during the winter. These two factors result in a winter pig crop only 87.2 percent of the annual average. The small winter pig crop results in reduced marketings the following summer and is related to higher hog prices.

**Table 1. Seasonality of the pig crop 1975 to 1987 ten major hog-producing states.**

| Quarter  | Sow farrowings | Pigs/litter | Pig crop |
|----------|----------------|-------------|----------|
| -----    |                |             |          |
|          | Seasonal index |             |          |
| Dec-Feb  | 89.0           | 98.0        | 87.2     |
| Mar-May  | 110.8          | 101.6       | 112.6    |
| June-Aug | 99.8           | 100.2       | 100.0    |
| Sept-Nov | 100.4          | 100.2       | 100.5    |
| -----    |                |             |          |

Conversely, the spring pig crop (March - May) has been the largest quarterly crop of the year. This is a result of both large farrowings and an above average weaning rate. The large pig crop in the spring creates large slaughter supplies in the fall contributing to low fall hog prices.

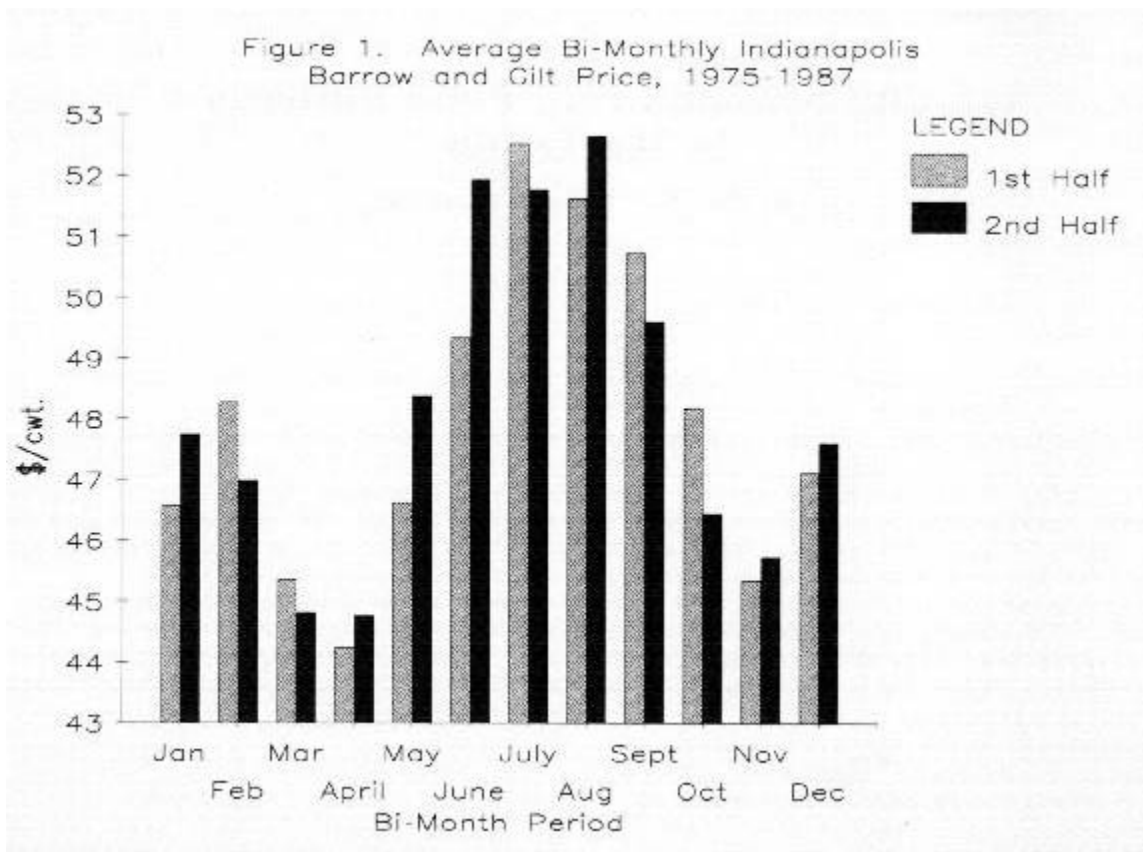
Pig crops in the summer (June - August) and fall (September - November) are close to average in size and therefore contribute less to price seasonality. However, somewhat large fall farrowings contribute to lower hog prices in the following March and April.

Seasonality which cannot be explained by supply factors may be attributed to demand for pork products. As an example, price increases in the spring and early summer are partially a result of the increased demand for loins for grilling, and for cold cuts which consumers exhibit greater preference for as temperatures rise. Also, price increases in late November and December are influenced by consumers' preference for "Christmas ham."

Having some knowledge of what causes the seasonal price pattern can help individuals decide whether the factors which give rise to the seasonality will occur in any given year, and therefore whether the expected seasonal pattern will be near average.

### **What Is the Seasonal Price Pattern?**

The historic seasonal price pattern for Indianapolis barrows and gilts for the years 1975-1987 is shown in Figure 1. The pattern is one of rising prices through early February, declining sharply into April, rising sharply and steadily to yearly highs in the summer, falling in the late summer and fall, with a pre-Christmas rally to finish the year. For this data period, Indianapolis prices averaged \$48.10 per hundredweight. Spring and fall lows averaged \$43 to \$45, February and December highs averaged in the \$47 to \$48 range, with summer price averages at \$51 to \$53.



How reliable is this pattern? In 5 out of the 13 years, the yearly low was made in late October or November; in 4 years the yearly low was made in April, and in 3 years it was made in January. In 7 of the 13 years the yearly high was made in the summer, 3 years the high was in October and 3 years in early February. Thus, there is no assurance in any given year that the yearly highs or lows will be made in the time period indicated in Figure 1, only a tendency over time.

Hog prices tend to vary sharply within each year. The average difference between the lowest and highest price period of the year averaged over \$17 per cwt. Often, the futures market does not anticipate this much variation, but history suggests it is likely. Remember also that the \$ 17 range is for one-half month average prices. The range between the extreme yearly high and extreme yearly low would be greater.

Table 2 shows the percentage of time Indianapolis prices were at or above a given price level during the historic data period. While most hog producers remember the extreme seasonal lows below \$30 per cwt., the Indianapolis market has been at or above this level 99.8 percent of the time over this period.

**Table 2. Percentage of time Indianapolis hog prices were at or above specific levels, 1975-1987.**

| Level | %    |
|-------|------|
| \$65  | .4   |
| \$60  | 3.1  |
| \$55  | 14.0 |
| \$50  | 38.2 |
| \$45  | 69.2 |
| \$40  | 89.5 |
| \$35  | 98.0 |

\$30

99.8

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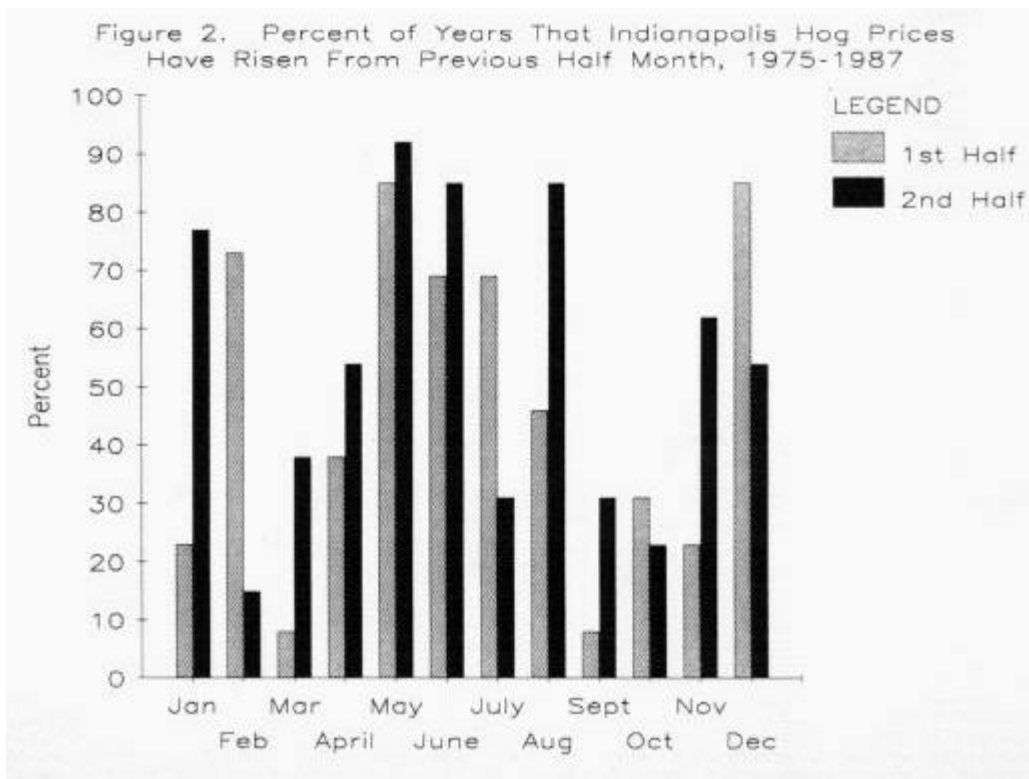
Implications of historic price levels for the future are unclear. However, it appears that the next 5 to 10 years may provide slightly lower average hog prices than the past 13 years. Lower priced feedgrains and protein supplement, as well as improving production efficiency, are seen as the most likely factors that might lower production costs and average prices received. On the other hand, inflation is the most likely reason that prices could average higher.

## **Will Prices Rise?**

What are the odds hog prices will rise in the next few weeks? Of course no one knows for sure. However, counting the number of years out of the last 13 that prices have risen at a particular time of year may provide a clue, especially if in most of the years prices have risen or fallen. The information in Figure 2 provides these historical odds. For example, in the first half of January, Indianapolis hog prices rose above the previous late December prices in only 3 of the 13 years or 23 percent of the time. Alternatively it could be said that prices have fallen during early January in 10 out of the 13 years, suggesting that the odds strongly favor declining prices.

The most reliable predictor of price direction would be when either price goes up in most years or when price goes down in most years. Prices in the second half of January for example, rose 77 percent of the time above early January prices. However, prices in the first half of March rose above last half February prices only 8 percent of the time (went down 92 percent of the time). On the other hand, if prices rose half the time and fell half the time, the seasonal price factor would not be a reliable predictor of price direction.

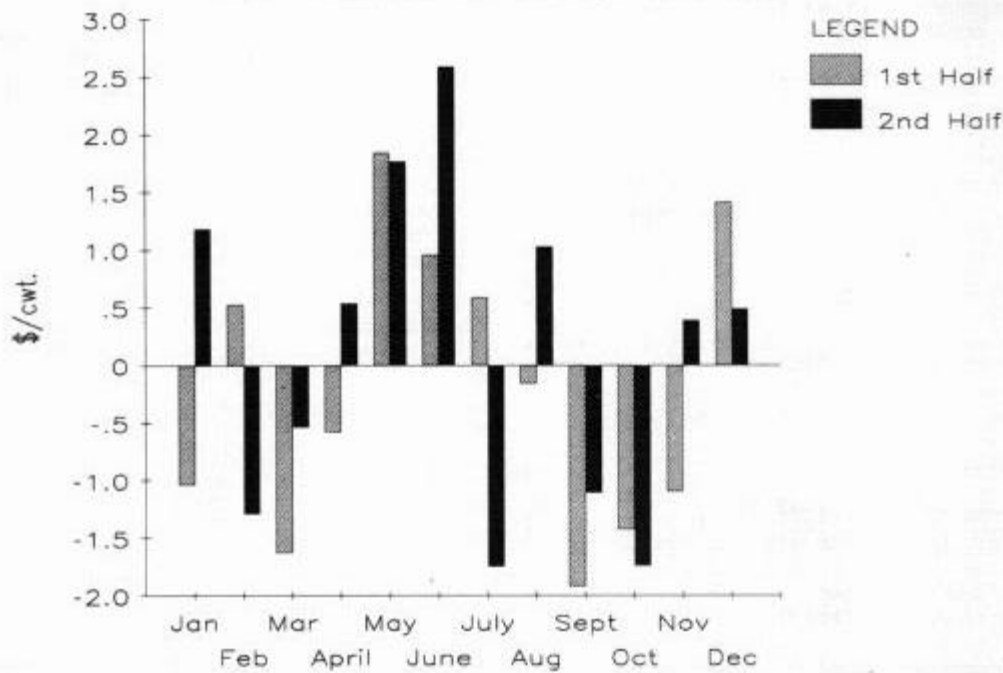
Figure 2 illustrates that the odds of prices rising above the previous period were greatest in the last half of January and first half of February; again in May, June, and the first half of July; in late August and again in early December. Falling prices were the general rule in the first half of January, late February through early April, in late July, and again in September, October, and early November.



### How Much Will Price Change?

The information in Figure 3 provides the average price change from the previous period for the 1975-1987 period. Prices on the average rose about \$ 1.20 per cwt., for example, in the second half of January compared to the first half of the month. This is the average for 13 years; in some years prices rose more; others less, and in 3 years prices went down. Information from Figures 2 and 3 can be used to approximate both the direction and magnitude of potential price changes during a normal seasonal pattern.

Figure 3. Average Change in Indianapolis Hog Price From Previous Half Month, 1975-1987



## Implications for Production and Marketing

### A. Produce More Hogs for Seasonal Highs

One production implication is to attempt to have more hogs to sell around a seasonal high, and to reduce volume or avoid marketing during seasonal lows. This means trying to achieve higher production of market ready hogs in the summer and perhaps having less market ready hogs in April and November. Prices for April and November have averaged about \$45. By contrast, prices for June, July, and August have averaged near \$52. A two litter-production system that farrows once in the spring and once in the fall is particularly vulnerable to marketing hogs at the seasonal price lows. Varying the breeding schedule by 1 to 2 months could make substantial differences in prices received for these operations. This same vulnerability is also apparent in the one litter system.

Hog operations that use confinement and continuous farrowings may find this concept of adjusting production levels around expected seasonal prices to be unprofitable. This is because of the greater economic need to keep facilities at full capacity to spread fixed costs. In any event, seasonal price patterns are only one of the factors that affect the profitability of hog production systems. As another example, producing hogs for summer marketing may, on the average, generate the highest prices, but also represents the most expensive pigs to raise because of costs of farrowing and death loss in the winter and the higher prices of feed in the spring and summer.

### B. Adjust Market Weights

The hog marketing system accepts a fairly broad range of market weights without discount. Non-discounted weight ranges of 210 to 250 pounds are common. This provides a measure of flexibility in deciding when hogs will go to market. Not only can producers attempt to market more hogs during a seasonal high price, they can also attempt to bias weights in favor of heavier hogs during seasonal highs.

For example, a producer who normally sells hogs at 225 pounds might hold late April hogs for several weeks in anticipation of a price rally. Alternatively, early September hogs might be marketed a few weeks early, if the normal seasonal price decline in September is anticipated. Again, seasonal price patterns are only one of the factors to consider in making selling weight decisions.

### *C. Sell this Week or Next?*

Every hog producer must make decisions regarding the exact timing of when to market hogs. Seasonal price tendencies may be helpful in deciding whether to sell now or hold them another week. For example, from early May the historical odds are quite high that prices will rally into late May. Conversely, in late August, historical odds are quite high regarding price declines into early September.

### *D. Price More Animals around Seasonal Highs*

Producers may attempt to price more animals around a seasonal high. This can be achieved by both pricing market ready hogs and forward pricing some hogs still on feed. For example, this strategy would suggest pricing hogs which will be delivered in April around the winter high which tends to occur in late January or early February. Pricing of hogs to be delivered in October and November should be completed by late August using this strategy.

Remember, October delivery hogs will generally be forward priced at sizable discounts to August cash hog prices. This strategy will prove profitable over time only if there is similar seasonality in futures prices. Research has not yet been conducted to prove this strategy.

### *E. Seasonal Price Forecast*

Historic seasonal patterns can be used to forecast prices. This method has proven reasonably accurate. Seasonal indexes are given in Table 3. To illustrate, say a producer was thinking of feeding to heavier weights. Assume hog prices in later April were \$43.25 and the producer wanted to estimate a price for late May. This could be done by multiplying the current price by the ratio of the index in the forecast period to the index in the base period, or for this example

$$\$43.25 \times (100.6 / 93.1) = \$46.73.$$

**Table 3. Average Indianapolis price levels and seasonal price indexes bimonthly, 1975-1987.**

| <b>1/2 month</b> | <b>Avg. price</b> | <b>Index</b> |
|------------------|-------------------|--------------|
| -----            |                   |              |
|                  | <b>\$/cwt</b>     |              |
| 1 January        | 46.57             | 96.8         |
| 2 January        | 47.75             | 99.3         |
| 1 February       | 48.28             | 100.4        |
| 2 February       | 46.99             | 97.7         |
| 1 March          | 45.36             | 94.3         |
| 2 March          | 44.82             | 93.2         |
| 1 April          | 44.24             | 92.0         |
| 2 April          | 44.78             | 93.1         |
| 1 May            | 46.62             | 96.9         |
| 2 May            | 48.39             | 100.6        |
| 1 June           | 49.35             | 102.6        |
| 2 June           | 51.94             | 108.0        |
| 1 July           | 52.53             | 109.2        |

|             |       |       |
|-------------|-------|-------|
| 2 July      | 51.78 | 107.6 |
| 1 August    | 51.62 | 107.3 |
| 2 August    | 52.65 | 109.5 |
| 1 September | 50.73 | 105.5 |
| 2 September | 49.62 | 103.2 |
| 1 October   | 48.19 | 100.2 |
| 2 October   | 46.45 | 96.6  |
| 1 November  | 45.35 | 94.3  |
| 2 November  | 45.74 | 95.1  |
| 1 December  | 47.12 | 98.0  |
| 2 December  | 47.61 | 99.0  |
|             | ----- | ----- |
|             | 48.10 | 100.0 |
|             | ----- | ----- |

If the seasonal pattern in the forecast year was similar to the historic average, this method could provide a reasonably accurate estimate. The producer should also consider what factors might vary in the forecast year from the historic average and consider how these will affect price. In particular the stage of the cycle is a major consideration. This price forecasting method should be used only for short run forecasting of 3 months or less.

## Summary

Seasonal price patterns provide helpful information in a hog marketing program. While a producer should not expect prices to always follow the seasonal pattern, there are specific times of the year when the historic odds of price increases or decreases are very large. Seasonal price tendencies are only one of the factors to be considered in price analysis or in making decisions about hog production and marketing. Several implications of how knowledge of seasonal prices might affect marketing and production decisions were examined.

Some argue that deseasonalization of farrowings has greatly reduced seasonality of hog prices. However, a separate study of price seasonality showed little change from the 1965-76 period to the 1980's. Therefore, seasonality remains in hog prices and using it in a hog marketing program still has merit.

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