



# pork industry handbook

Michigan State University Extension

## Seasonality of Hog Prices

### Authors

John Lawrence, Iowa State University  
Ami Dittmer, Iowa State University

### Reviewers

Tom R. Carr, University of Illinois  
David E. Kenyon, Virginia Polytechnic and State University  
Larry Jacobson, University of Minnesota  
Al Wellman, University of Nebraska

Hog prices historically have shown variation from month to month with a tendency for the changes to follow a degree of seasonal regularity from year to year. Because the changes during the year are repetitive or consistent, they are a useful input into production, marketing, or pricing decisions.

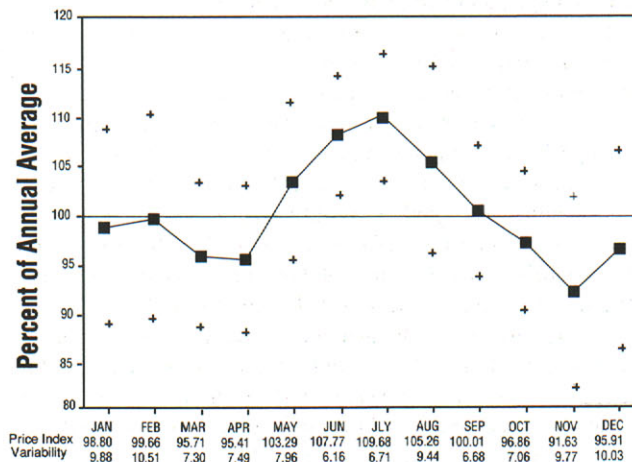
Seasonal price changes result from changes in the supply of hogs and pork, changes in consumer demand for pork products, or a combination of these factors. Seasonal variations in pork supply are less pronounced now than they were 15 to 20 years ago. With more of the production coming from larger operations, sow farrowings are more evenly distributed throughout the year; however, there is still enough month-to-month variation in farrowings to bring significant seasonal changes in levels of pork production. Consumer demand for pork and for particular retail cuts and products also varies somewhat from one period of the year to another.

Seasonal price patterns may change somewhat over time if there are changes in production technology, industry structure, or other factors that affect production patterns or demand. These kinds of information are reflected in the seasonal price indexes presented in Figures 1 through 4. The first is an average price index for each month. This shows the average relationship of prices in a particular month to the average for all months in the years included in the index calculation. The index primarily reflects the seasonal variation in price, since the calculation procedure eliminates most of the price variation caused by other factors.

The second kind of information presented is a variability factor that provides an indication of the reliability of the price index for a particular month. It is based on the variability of prices for a specified month during the years included in the

index calculation. Specifically, the points in the Figures that are above and below a particular monthly index indicate the range where the index for that month could be expected to fall 68% of the time. Use Figure 1 as an example. Since the February seasonal index value is 99.66, and the variability factor is 10.51, then the price in a particular year may be as high as 110.17% or as low as 89.15% of the annual average 68% of the time. The smaller the variability factor and the closer the points are to the index value, the more reliable is the monthly index.

**Figure 1: Seasonal Price Index for Barrows and Gilts, 7 Markets, 1983-1992**

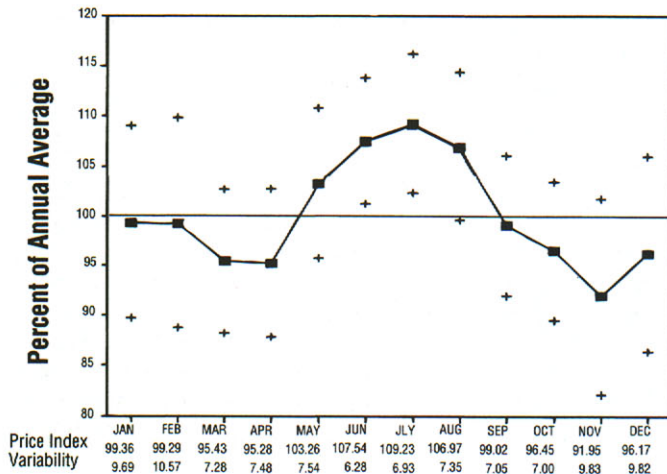


## Seasonal Prices Index for Slaughter Hogs

**Barrows and Gilts.** The seasonal price index of monthly average prices for barrows and gilts at seven terminal markets is presented in Figure 1. On average for the 1983-92 period, prices were below the year average during the months of January through April, then increased seasonally through July. Prices trended downward from July through a fall low in November, then moved slightly higher in December. Prices were above the yearly average from May through September and were below the annual average from January through April, and from October to December. Lowest prices were during April and November and the highest prices were in June and July.

Figure 2 shows a similar seasonal price pattern for barrows and gilts in the interior Iowa and southern Minnesota market area with the exception of below average September prices. Price variability, in relation to the average pattern, is greatest in November, December, January and February.

**Figure 2: Seasonal Price Index for IA - So. MN Barrows & Gilts, 1983-1992**



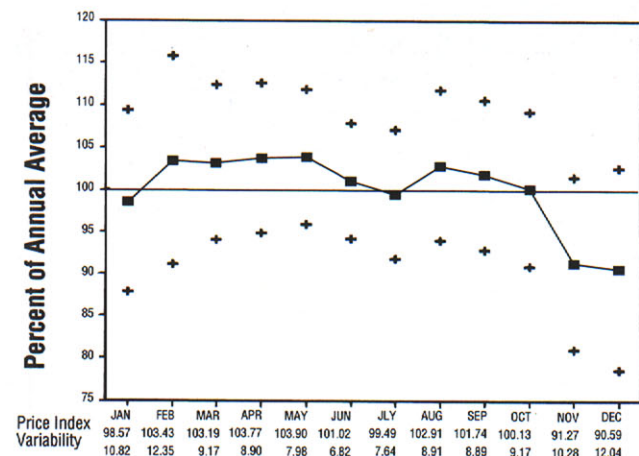
The tendency for prices to show seasonal weakness during the late winter, early spring, and again during the late summer and fall results in part from somewhat larger pork production during these periods than during the summer months. More pigs are born during the March to May and September to November periods than in the other months of the year.

Seasonal price variation also may be influenced by changes in consumer demand for particular fresh and processed cuts of pork and by seasonal tendencies of pork processors to either place pork into cold storage or to reduce inventories. Demand for hams, for example, tends to be strong prior to the Christmas and Easter holidays and is usually stronger in the summer months. However, demand for fresh pork cuts is typically stronger in the fall and winter months. There is often net movement of pork into cold storage during the fall and in the late winter or early spring when supplies are seasonally large and prices are more likely to be under pressure. Net out-movement from storage is more likely in the late spring and summer as prices trend up seasonally.

**Sows.** Prices for cull sows sold for slaughter show a different seasonal pattern than barrows and gilts, as shown in Figure 3. On average for the 1983-92 period, prices remained

fairly steady from February to May, then declined seasonally through July. Prices trended upward to a summer high in August, then declined to a seasonal low in December. Prices were above average for the year from February through October except for a slight decline in July. They were below the annual average during January, July, November and December. Highest prices were in May and lowest prices were in December.

**Figure 3: Seasonal Price Index for Cull Sows, 6 Markets, 1983-1992**

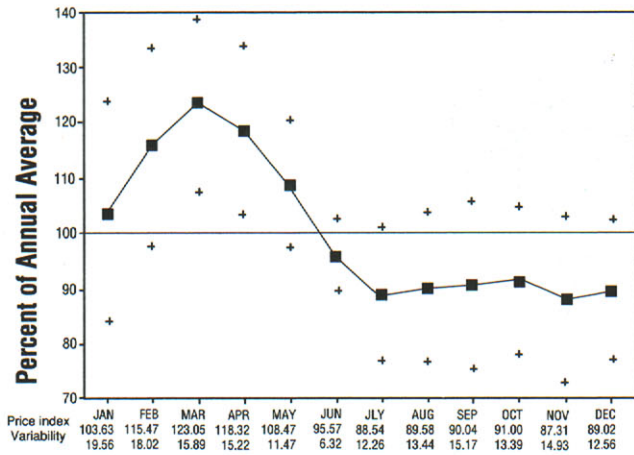


These seasonal price tendencies are influenced in part by changes in the volume of sows slaughtered in different time periods, as well as by seasonal differences in total slaughter and production of pork. Sow slaughter, as a percent of total hog slaughter, tends to be lowest in the February to April period and highest during June to August. There is summer strength in sow prices, however, due to seasonally reduced total slaughter and despite a relatively high percentage of sows in the slaughter. The actual price differential between barrows and gilts and sows normally is quite narrow during the February to April period, often in the \$1 to \$3 per cwt range. It is usually largest in June to August and December—often in the \$7 to \$10 per cwt range.

## Seasonal Price Index of Feeder Pigs

Prices of feeder pigs show fairly strong seasonal variation (Figure 4). On average during the 1983-92 period, prices were above average January through May. Prices declined seasonally through July—35 percentage points from March. Prices were below the annual average July through December. Stronger prices in the spring reflect expectations of feeder pig finishers that there will be seasonal summer strength in slaughter hog prices. By contrast, relatively low feeder pig prices during the summer result from expectations of seasonally low slaughter hog prices during the fall. The wide variability in feeder pig prices is due to feeder pig demand being driven by expected profits which are impacted by corn prices and expected hog prices and thus feeder pig prices are susceptible to wider fluctuations than the finished hog market.

**Figure 4: Seasonal Price Index for Iowa Feeder Pigs, 40 lbs., 1983-1992**



### Using Seasonal Price Patterns and Indexes

The seasonal price patterns or indexes can be used very easily by producers to forecast hog prices, and because the patterns are fairly predictable, they provide a reasonably accurate forecast of what prices will do. To use the index, divide the current monthly average market price for barrows and gilts by the current month's index, and then multiply that result by the future month's index to get a forecast of that future month's price.

For example: if the December, 1993 average price for barrows and gilts was \$40.40, the predicted average price for January, 1994 is \$41.62.

$$\begin{array}{r}
 \$40.40 \text{ (Avg. Dec. Price)} \\
 \hline
 95.91 \text{ (Index for Dec.} \\
 \text{from Figure 1)}
 \end{array}
 \times
 \begin{array}{r}
 98.80 \text{ (Index for Jan.} \\
 \text{from Figure 1)}
 \end{array}$$

= \$41.62 (Predicted avg. Jan. price)

Similar procedures can be used for feeder pigs and cull sows by simply using the appropriate index numbers for each of those classes of livestock. The forecast method is for average prices for the month and not a specific price of the month. In most months, the forecast of barrow and gilt prices will be within plus or minus two dollars of the seasonal forecast two-thirds of the time. Cull sow prices typically will be within plus or minus two dollars two-thirds of the time. Feeder pig prices are much more variable and harder to predict. Their prices typically will be within plus or minus six dollars per head approximately two-thirds of the time.

In addition to forecasting, a producer can use seasonal price indexes to evaluate forward contracting or forward pricing alternatives. For example, a producer with barrows and gilts to sell in October observes a futures price, adjusted for basis, of \$45 for October delivery. The producer's forecast using the seasonal price indexes projects barrow and gilt prices for October to be \$42. In this example, the forward pricing opportunity would be more profitable than staying in the cash market, provided his forecast is correct.

The monthly indexes can be used as indicators of the most likely trend in prices over the next few weeks or months. The variability factors can then be used to make some further judgment about the probability of prices being close to the level indicated by the index. The actual conditions in any given year need to be considered in using seasonal indexes. The usual pattern could be altered by a turnaround in the hog production cycle or by some other development. A shift from expansion to cutback, for example, might temper or eliminate the normal fall price decline in a particular year.

### Probability of Hog Price Changes

The actual change in short-term prices over a period of years is another potentially useful guide to seasonal price changes. Table 1 summarizes information on price changes of slaughter barrows and gilts by two week periods. The percentage of years that prices increased and decreased in the observed period provides an indication of the probability of particular short-term price movements. The average percentage increase or decrease gives some idea of the possible magnitude of price change. For example, the data for 1983-92 indicates there is a high probability that prices will decrease between the first and last half of the month of January. But there is a high probability of price strength from the first half to the last half of February.

This information can be especially useful in decisions about the weight at which hogs should be marketed at a particular time. It can help with decisions on whether to market a bit lighter than normal or to carry hogs an additional week or so before marketing.

**Table 1. Hog price changes by 2-week periods 1983-1992.**

Month	2-week Period	Increase			Decrease			Average Price Change
		No. of Years	Percent of Total Years	Average Price Increase	No. of Years	Percent of Total Years	Average Price Decrease	
			(%)	(%)				(%)
JAN	1st	2	20	3.55	8	80	2.01	-0.90
	2nd	7	70	3.62	3	30	2.51	+1.78
FEB	1st	8	80	1.99	2	20	3.43	+0.91
	2nd	2	20	2.05	8	80	4.31	-3.04
MAR	1st	3	30	1.7	7	70	4.23	-2.45
	2nd	5	50	3.37	5	50	2.83	+0.27
APR	1st	4	40	2.23	6	60	2.68	-0.72
	2nd	6	60	3.19	4	40	1.02	+1.51
MAY	1st	8	80	6.31	2	20	0.23	+5.00
	2nd	10	100	5.11	0	0	—	+5.11
JUN	1st	7	70	2.32	3	30	2.50	+0.87
	2nd	7	70	5.78	3	30	4.39	+2.73
JLY	1st	6	60	2.64	4	40	2.58	+0.55
	2nd	7	70	1.23	3	30	4.49	-0.49
AUG	1st	3	30	2.98	7	70	2.90	-1.14
	2nd	5	50	2.03	5	50	4.42	-1.19
SEP	1st	0	0	--	10	100	6.90	-6.90
	2nd	4	40	4.00	6	60	5.17	-1.50
OCT	1st	4	40	4.06	6	60	2.90	-0.12
	2nd	4	40	1.12	6	60	5.86	-3.07
NOV	1st	1	10	6.54	9	90	5.12	-3.95
	2nd	7	70	2.49	3	30	1.93	+1.16
DEC	1st	8	80	4.57	2	20	1.40	+3.38
	2nd	4	40	7.54	6	60	2.93	+1.26
JAN	1st							

<sup>1</sup>Based on daily average prices for U.S. 1-2's, 230-250 lb barrows and gilts, Iowa-Southern Minnesota Direct Hog Trade.