



**Developments in the Feeder-Pig Industry and
Trends and Cycles in Prices and Receipts
Of Feeder Pigs in Kentucky**

By

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Late-Stage Shifts in Baby Tobacco Allotments

1950-51

By Milton J. Holt, Robert E. Brown and Curtis M. Henderson

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TABLE OF CONTENTS

	Page
LIST OF TABLES	iii
LIST OF ILLUSTRATIONS	iv
INTRODUCTION	1
Data for this Study	1
Purpose of Study	2
PRESENT STATUS OF THE FEEDER-PIG INDUSTRY	2
Feeder-Pig Surpluses or Deficits of Individual States, North Central Region	4
Feeder-Pig Trade by States	4
Evidence of the Emergence of a Feeder-Pig Industry in Kentucky	6
Importance of Feeder-Pig Production in Kentucky	10
Marketing Systems for Kentucky Feeder Pigs	11
FEEDER-PIG PRICE AND MARKET RECEIPTS TRENDS	11
Market Receipts Trends	11
Trend in Average Weight of Feeder Pigs Marketed	11
Feeder-Pig Price Trends	15
CYCLICAL MOVEMENTS IN FEEDER-PIG PRICES AND MARKET RECEIPTS	17
Feeder-Pig Price Cycles	17
Comparison with Cycles in Hog Production	18
Causes of Cycles in Hog Production	21
SUMMARY	22
LITERATURE CITED	26

LIST OF TABLES

Table	Page
1. Direct Inshipments of Feeder Pigs into Iowa, Illinois, Indiana and Ohio, by Years, 1956-67	5
2. Direct Inshipments of Feeder Pigs into Iowa by State of Origin, by Years, 1956-67	6
3. Inshipments of Feeder Pigs into Illinois by State of Origin, by Years, 1958-67	7
4. Direct Inshipments of Feeder Pigs into Indiana by State of Origin, by Years, 1957-67	7
5. Inshipments of Feeder Pigs into Ohio by States, by Years, 1960-67	8
6. Outshipments of Hogs for Feeding and Breeding from Wisconsin, by State of Destination, by Year, 1955, and 1958-67	8
7. Feeder Pig Shipments from Kentucky, by State of Destination, by Years, 1957-67	9
8. Average Receipts and Annual Trend Movements for Feeder Pigs by Weight Groups, Five Central Kentucky Auction Markets, 1949-62	13
9. Average Receipts and Annual Trend Movement for Slaughter Hogs at Seven Midwest Terminal Markets, 1949-62	15
10. Trend Comparison of Annual Average (Deflated) Price of Feeder-Pigs (over 100 Pounds) with Slaughter-Hog Price (Deflated) at Five Central Kentucky Auctions and Seven Midwest Terminals, 1949-62	17
11. Trend in Annual Average Price of Feeder Pigs (Deflated) and Significance of Trend at Five Central Kentucky Auction Markets, 1949-62	18
12. Fall Farrowing as a Percentage of Spring Farrowings by States, 1955-67	24

LIST OF ILLUSTRATIONS

Figure	Page
1. Approximate Market Supply Area of Five Central Kentucky Livestock Auction Markets	2
2. Trend of Market Receipts of Feeder Pigs (under 160 lb) at Five Central Kentucky Auction Markets, 1927-62	12
3. Trend of Average Weight of Feeder Pigs (under 160 lb) at Five Central Kentucky Auction Markets, 1949-62	14
4. Trend in Feeder-Pig Prices (under 160 lb) at Five Kentucky Auction Markets, 1949-62	16
5. Cycles in Feeder-Pig Prices at Five Central Kentucky Auction Markets and Cycles in Hog Prices, Chicago, 1949-62	19
6. Comparison of Cycles in Hog Production in Kentucky and the United States, 1949-62	20
7. Cyclical Movements of Receipts of Feeder Pigs (under 160 lb) Compared with Cyclical Movements of Receipts of Slaughter Hogs, 181-229 lb, Central Kentucky Auction Markets, 1949-62	23

LIST OF ILLUSTRATIONS

Figure	Page
1. Approximate Market Supply Area of Five Central Kentucky Livestock Auction Markets	2
2. Trend of Market Receipts of Feeder Pigs (under 160 lb) at Five Central Kentucky Auction Markets, 1927-62	12
3. Trend of Average Weight of Feeder Pigs (under 160 lb) at Five Central Kentucky Auction Markets, 1949-62	14
4. Trend in Feeder-Pig Prices (under 160 lb) at Five Kentucky Auction Markets, 1949-62	16
5. Cycles in Feeder-Pig Prices at Five Central Kentucky Auction Markets and Cycles in Hog Prices, Chicago, 1949-62	19
6. Comparison of Cycles in Hog Production in Kentucky and the United States, 1949-62	20
7. Cyclical Movements of Receipts of Feeder Pigs (under 160 lb) Compared with Cyclical Movements of Receipts of Slaughter Hogs, 181-229 lb, Central Kentucky Auction Markets, 1949-62	23

DEVELOPMENTS IN THE FEEDER-PIG INDUSTRY AND
TRENDS AND CYCLES IN PRICES AND RECEIPTS
OF FEEDER PIGS IN KENTUCKY

By

Harry R. White,* D. Milton Shuffett, and Robert W. Rudd

This study is a continuation of a portion of an earlier research study and represents a reappraisal of the developments, including trends and cyclical patterns of market receipts and prices of feeder pigs, in a five-market area of Central Kentucky. Earlier research by Rudd [9] for the same five Central Kentucky markets analyzed data for the period 1926-48. The present study uses as primary data the observations on market receipts, weights, and prices of feeder pigs on the same five auction markets from 1949 to 1962. However, to insure continuity in the research and analysis, some of the data series were combined for analysis using all available data from 1926 to 1962. Although the major objectives of this study relate to an analysis of trends and cycles of feeder-pig prices and receipts in the central Bluegrass area of Kentucky, an effort has been made to compare the results obtained with those from other feeder-pig producing areas.

Data for this Study

The data for this study were taken from the sales records of five Central Kentucky auction markets located at Danville, Lexington, Winchester, and Paris¹ and serving most of Central Kentucky (Fig. 1). These markets are among the largest of the 21 auctions located in 18 towns in the Bluegrass area.

Selection of markets was made on the basis of size and sales-day continuity. Size assures sufficient market receipts for continuous price quotations. This group of markets gives a complete set of sale

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¹Livestock auction markets supplying sales data were: Boyle County Stockyards, Danville; Bluegrass Stockyards, Lexington; Clay-Gentry Stockyards (later operating as Clay-Wachs), Lexington; Farmers Sales Company, Winchester; and Bourbon County Stockyards, Paris.

significant changes in the average weight at which feeder pigs are sold. The trend toward specialization in the feeder-pig industry should result in feeder pigs being traded at weights which fall within the narrow range where the two hog-production phases overlap. The available evidence indicates that this range should extend from 40 to 60 pounds with pigs averaging around 8 to 9 weeks old.

Data obtained from the Wisconsin Feeder-Pig Marketing Cooperative [11] indicate that for the years 1958-62 the average weight of feeder pigs sold in Wisconsin ranged from 45.5 to 46.3 pounds for an average volume of 225,864 head. The minimum weight was 40 pounds, and very few pigs were sold above 60 pounds.

Combined sales data for six southern Indiana auctions [7] for the years 1954-64 indicate the average weight over the 11-year period was 58.45 pounds for an average annual volume of 44,772 head.

In Missouri the published feeder-pig sales reports of the Missouri Cooperative Feeder Livestock Association [6] for the years 1955-62 indicate that the average weight of the majority of sales is in the range of 55 to 65 pounds.

Information obtained from the Tennessee Agricultural Experiment Station [3] shows that the average weight of feeder pigs sold through feeder-pig sales in that state was 53.8 pounds, for an average volume of 60,863 head during the years 1960-63.

The Minnesota Crop and Livestock Reporting Service [5] reports the average age of feeder pigs purchased by farmers in that state during 1963 was 7.9 weeks with an average weight per head of 44.5 pounds. This compares with the average of 8.0 weeks and an average weight of 43.4 pounds reported for 1961.

Gaydon [2], in an Indiana study on feeder-pig price discovery, reported that farmers who were set up to feed purchased feeder pigs efficiently were anxious to obtain pigs at the minimum weight and age consistent with a feeding rather than a rearing program. From a study of pricing formulas used to determine how much a buyer can pay for feeder pigs it was also revealed that some buyers attempt to induce producers to sell at the minimum practicable age and weight by specifying that they are not prepared to pay more per pound for pigs over, for example, 50 pounds than their own cost of putting on a pound of gain at similar weights.

It appears from the available evidence that the preferred weight for feeder pigs is trending toward 40-50 pounds. The trend is especially evident in the case of interstate shipments of pigs. Feeders want thrifty, healthy, fast-gaining pigs ready to move ahead rapidly in the feed lots. These pigs will normally weigh 40 pounds or more at 8 weeks of age.

Feeder-Pig Surpluses or Deficits of Individual States,
North Central Region

The "net positions" of states, with respect to whether an exporter or importer of feeder pigs, points out the fact that the trade volume of feeder pigs can be broken into two parts, i.e., feeders moving solely in intrastate trade and those moving in interstate trade. Very little reliable data are available on the volume of feeder pigs moving in intrastate trade. However, the system of permits and inspections governing the interstate shipment of feeder pigs has made a reliable source of data available on interstate movements of feeder pigs.

Imports of feeder pigs into Iowa, Illinois, Indiana, and Ohio are summarized in Table 1 for the years 1956-67. Extreme accuracy cannot be claimed for the inshipment data since Gaydon [2] observed that data collected by a sample survey in the states of Iowa and Illinois failed to match up exactly with the data presented here which are a by-product of state import licensing and inspection requirements. It is believed, however, that the data provide a useful indication of the general level of feeder-pig interstate movements.

Feeder-Pig Trade by States

The primary movement of feeder pigs in interstate trade appears to be unidirectional into Iowa, Illinois, Indiana, and Ohio from states surrounding them. The available data can be analyzed on the basis of inshipments of feeder pigs into Illinois, Indiana, Iowa, and Ohio by state of origin. A more-or-less complete picture of the pattern of all the feeder pigs moving in interstate shipments is available for analysis, since other interstate movements are small compared with the large flow of pigs into the four major deficit states.

Shipments of feeder pigs to the west coast represent a possible exception to this general pattern. Records were not kept on the number of feeder pigs entering California prior to August 1963. The data available [8] show 8,710 head shipped to California from August to December 1963. In 1964 there were 27,412 head shipped in and in 1965 inshipments increased to 37,475 head. Nebraska was the state of origin for 89 per cent of these shipments, 10 per cent came from Iowa, and one per cent originated in Missouri.

The state of Washington does not record inshipments of swine by feeders, for slaughter, or by state of origin. The total inshipments of swine for 1964 and 1965 were 136,402 and 121,439 respectively. These data are insufficient to conclude that the west coast is a major importer of feeder pigs.

TABLE 1

DIRECT INSHIPMENTS OF FEEDER PIGS INTO IOWA, ILLINOIS, INDIANA
AND OHIO, BY YEARS, 1956-67

State	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
-----thousand head-----												
Iowa	382	475	587	806	1,153	683	645	747	808	735	755	734
Illinois	--	148	330	304	173	220	275	394	321	321	347	396
Indiana	--	195	498	402	463	641	836	691	606	508	579	711
Ohio	--	--	--	--	133	191	258	224	184	174	179	221

Sources: Iowa: Iowa Crop and Livestock Reporting Service, Iowa Department of Agriculture, Division of Agricultural Statistics.
 Illinois: Illinois Crop and Livestock Reporting Service, Illinois Department of Agriculture, Division of Agricultural Statistics.
 Indiana: Indiana Crop and Livestock Reporting Service, Statistical Reporting Service, U. S. Department of Agriculture.
 Ohio: Ohio Crop and Livestock Reporting Service, Ohio Department of Agriculture, Division of Animal Husbandry.

The inshipments of feeder pigs into Iowa by state of origin are shown in Table 2 for the period 1956-67. The Iowa Crop and Livestock Reporting Service indicates that the data shown in Table 2 are largely feeder pigs, but include a few breeder hogs, show hogs, etc., which come into the state for purposes other than for feeding for slaughter. Market data by states of origin are not available. However, the direct inshipments should provide a good indication of the source of feeder pigs by states.

The major suppliers of feeder pigs to Iowa are Wisconsin, Missouri, and Minnesota. These three states supplied 83.9 per cent of the feeder pigs sent to Iowa from 1965 to 1967.

Table 3 shows inshipments of feeder pigs into Illinois. Wisconsin was the main supplier, with Arkansas showing the most rapid increase in importance during the period 1958-67. Feeder-pig inshipments have not shown the increase in Illinois that is evident in other states.

Inshipments of feeder pigs into Indiana by state of origin are shown in Table 4 for the years 1957-67. The most important change occurring was the very substantial increase in inshipments during the period. Tennessee was the principal source of feeder-pig imports, although Arkansas and Kentucky and, to a lesser extent, Missouri showed

TABLE 2

DIRECT INSHIPMENTS OF FEEDER PIGS INTO IOWA BY STATE
OF ORIGIN, BY YEARS, 1956-67

State	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
-----thousands of head-----												
North Dakota	1	2	11	65	17	13	-- (less than 1,000 head) --					
Arkansas	4	23	12	15	13	3	8	11	27	24	35	47
Illinois	2	1	6	3	4	3	2	3	7	33	62	69
Minnesota	51	51	93	144	217	132	100	143	179	143	197	117
Missouri	92	171	136	113	282	143	185	210	195	200	188	231
Nebraska	39	6	5	10	10	7	4	5	4	5	5	3
South Dakota	13	12	15	82	36	18	15	7	9	7	6	3
Wisconsin	169	202	298	361	549	352	328	364	384	298	255	236
All Others	12	8	11	13	25	12	3	4	3	25	7	28
Total	383	476	587	806	1,153	683	645	747	808	735	755	734

Source: Iowa Crop and Livestock Reporting Service, Iowa Department of Agriculture, Division of Agricultural Statistics.

increases in importance. Tennessee, Kentucky, Arkansas, and Missouri have increased in importance as suppliers of feeder pigs to Indiana, Illinois, and other corn-belt states.

Inshipments of feeder pigs into Ohio by states of origin for 1960-67 are shown in Table 5. Wisconsin, Kentucky, and Tennessee supplied 64.4 per cent of the feeder pigs shipped into Ohio during 1955-64 and 71 per cent during 1965-67. Indiana and Michigan show increasing importance; however, in the case of Indiana, the feeder pigs may have originated in other states and been shipped through Indiana. A comparison of data in Table 4 with Table 6 shows that Indiana consistently reports more inshipments of feeder pigs from Wisconsin than are reported as outshipments to Indiana by Wisconsin.

Evidence of the Emergence of a Feeder-Pig Industry in Kentucky

Buying and selling of feeder pigs have, until recently, been the result of short-term adjustments to changes in feed costs or changes in the financial position of the participant. A transformation toward a commercial feeder-pig industry based on the demands of a deliberate over-all business policy is now evident.

Evidence of development of pigs as a regular farm enterprise is available in substantial volume. For example, the shipment of feeder pigs from Kentucky to Indiana has developed into a substantial industry during recent years (Table 7).

TABLE 3

INSHIPMENTS OF FEEDER PIGS INTO ILLINOIS BY STATE OF ORIGIN, BY YEARS, 1958-67

State	1958 ^a	1959	1960	1961	1962	1963	1964	1965	1966	1967
-----thousand head-----										
Wisconsin	183	189	82	98	49	55	174	133	136	103
Missouri	28	84	34	39	33	32	103	74	75	116
Tennessee	12	22	28	33	19	3	18	8	8	22
Indiana	1	3	11	17	12	4	23	23	36	45
Arkansas	--	1	6	18	20	9	38	40	43	51
Kentucky	--	--	--	--	--	5	17	23	26	41
Other States ^b	1	5	12	15	12	5	21	20	23	18
Total	225	304	173	220	145	113	394	321	347	396

^aIncludes May-December 1958 only. January-April 1958 not available.

^bOther states include Minnesota, Georgia, Iowa, Louisiana, Pennsylvania, Oklahoma, Texas, Delaware, Maryland, and Alabama.

Source: Illinois Department of Agriculture, Division of Agricultural Statistics.

TABLE 4

DIRECT INSHIPMENTS OF FEEDER PIGS INTO INDIANA BY STATES OF ORIGIN, BY YEARS, 1957-67

State	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
-----thousand head-----											
Tennessee	148	338	192	280	324	415	330	262	203	263	308
Arkansas	1	27	46	54	101	127	70	31	21	15	4
Kentucky	14	48	73	81	99	161	147	147	130	162	240
Missouri	5	20	28	23	67	84	74	89	95	78	89
Wisconsin	17	40	53	13	28	30	52	66	36	29	24
Other States	10	24	10	12	22	19	18	11	23	32	46
Total Direct Shipments	195	498	402	463	641	836	691	606	508	579	711

Source: Indiana State-Federal Crop and Livestock Reporting Service.

TABLE 5
INSHIPMENTS OF FEEDER PIGS INTO OHIO BY STATES,
BY YEARS, 1960-67

State	1960	1961	1962	1963	1964	1965	1966	1967
-----thousands of head-----								
Wisconsin	29	61	65	70	62	60	59	41
Kentucky	56	47	44	44	39	58	56	74
Tennessee	13	29	48	21	10	13	16	31
Indiana	4	17	32	23	25	18	13	27
Michigan	2	11	16	18	14	13	15	13
North Carolina	16	9	22	17	10	5	7	13
Arkansas	--	--	9	11	9	--	--	1
West Virginia	--	2	2	5	6	4	4	3
Virginia	--	2	2	7	5	--	--	--
Pennsylvania	--	--	5	6	3	2	4	4
Other States ^b	13	13	13	2	1	1	5	14
Total	133	191	258	224	184	174	179	221

^aBreakdown by state of origin was not available before 1960. Total inshipments in preceding years: 1956, 5,000 head; 1957, 6,000 head; 1958, 9,000 head; 1959, 26,000 head.

^bStates with less than a thousand head reported.

Source: "Shipment of Feeder Pigs into Ohio from Other States," Ohio Crop Reporting Service, Ohio Department of Agriculture, Division of Animal Industry.

TABLE 6
OUTSHIPMENTS OF HOGS FOR FEEDING AND BREEDING FROM WISCONSIN,
BY STATE OF DESTINATION, BY YEAR, 1955, AND 1958-67^a

State	1955	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
-----thousands of head-----											
Iowa	151	250	286	379	339	388	396	368	295	258	253
Illinois	70	254	196	83	93	122	183	151	129	124	106
Ohio	11	8	25	23	46	59	63	47	52	47	37
Indiana	33	35	41	10	24	29	47	65	35	30	21
Minnesota	20	44	37	27	25	22	17	12	9	23	43
Michigan	4	1	1	5	11	14	12	9	8	10	10
South Dakota	1	7	6	8	14	9	14	18	20	15	45
Nebraska	--	7	11	7	12	13	3	--	--	1	33
Other States	13	10	11	7	13	5	6	12	18	14	10
Total	303	616	614	549	577	661	741	682	564	522	558

^aPermits issued by Division of Animal Health, Wisconsin Department of Agriculture, almost entirely for feeding.

Source: Wisconsin Agricultural Statistics, Wisconsin Statistical Reporting Service.

TABLE 7
FEEDER PIG SHIPMENTS FROM KENTUCKY, BY STATE OF
DESTINATION, BY YEARS, 1957-67

State	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967
-----thousands of head-----											
Indiana	14	48	73	81	99	161	146	147	129	161	240
Ohio	--	--	--	56	47	44	44	39	23	26	41
Total	14	48	73	137	146	205	190	186	152	187	281

Sources: Indiana: Indiana State Federal Crop and Livestock Reporting Service.
Ohio: Shipment of Feeder Pigs into Ohio, Ohio Crop Reporting Service, Ohio Department of Agriculture, Division of Animal Industry.
Shipment of Feeder Pigs into Ohio from Other States, Ohio Crop Reporting Service, Ohio Department of Agriculture, Division of Animal Industry.

Interviews with local market representatives indicate that Indiana and Ohio are the largest receivers of feeder pigs shipped interstate from the Central Bluegrass area. A substantial increase has developed in the number of feeder pigs transported to Indiana over the period since 1957.

A second example of evidence supporting the emergence of a distinct and viable feeder-pig industry in the Central Bluegrass area of Kentucky is the upward trend in feeder-pig production in the five market areas of Central Kentucky. For the years 1949 to 1962, the trend in production of feeder pigs weighing less than 80 pounds increased at an average annual rate of 6.77 per cent.

The changes taking place in the Kentucky feeder-pig industry are only a part of a much larger change taking place in the industry in general. Purchases of feeder pigs for 1956 in the North Central Region, which includes Kentucky and the corn-belt states, amounted to 7.4 million head and constituted approximately 10.2 per cent of total hog marketings. Radical changes appear to have taken place since 1956 as shown by the changes in Illinois and Indiana, the number two and number three hog-producing states in the United States. In 1956, feeder-pig purchases as a percentage of hog marketings in Illinois and Indiana were 9.7 per cent and 7.4 per cent, respectively. Gaydon [2] reported that by 1961 these proportions were approximately 20.0 per cent in both states.

An increasing number of farmers are recognizing the dichotomy of the slaughter-hog production process, i.e., the labor-intensive, feed-extensive nature of feeder-pig production and the feed-intensive, labor-extensive nature of finishing purchased feeder-pigs.

Technological advances in feeder-pig and slaughter-hog production have provided the opportunity and the incentive to increase specialization. Advances in the design of farrowing houses, including heating and ventilation, have made it possible to successfully farrow sows in winter without unreasonable increases in costs and, as a result, cut down on the highly seasonal nature of sow farrowing. Wisconsin, for example, has increased fall farrowings as a percentage of spring farrowings from a long-term average of 50 per cent before 1955 to 83 per cent in 1960, 85 per cent in 1964, and 92 per cent in 1967. Also, spring and fall farrowings have leveled out by months with relatively heavier farrowings in November, December, and January than was the case before 1955.

Another technical advancement that has given emphasis to the development of a specialized feeder-pig industry has been the development of techniques and equipment to reduce significantly the labor involved in feeding, watering and manure disposal associated with the finishing of purchased feeder pigs. From an economic point of view, the desirability of exploiting the comparative advantage found in separating hog production into the two components of feeder-pig production and finishing purchased feeder pigs means serious consideration should be given to accepting specialization as a way of operation in the hog business.

Importance of Feeder-Pig Production in Kentucky

Farmers in the Central Kentucky area, which is the principal feeder-pig producing area in the state, sold 413,000 head of hogs in 1964. Approximately half of the hogs sold in the Central Kentucky area are feeder pigs.

Kentucky feeder-pig production is localized to a great extent in the Central Kentucky area. There are several factors which support this localization: (1) feeder-pig production requires pasture in excess of other livestock needs, and in the Central Kentucky region one half to three fourths of the agricultural land is in pasture; (2) small grain crops are seeded in the fall and provide added late fall and early spring pasture; (3) the Central Bluegrass area is a corn-deficit area owing in part to the shallow soil with bedrock close to the surface which discourages large corn acreages--feeder pigs can be economically produced on a limited supply of concentrate feed, whereas the production of slaughter hogs would require expensive shipments of corn; and (4) the feeder enterprise is flexible in that the farmer can decide at any time after weaning age to sell feeders or hold his hogs for heavier weight, depending on price and cost expectations. However, with increased specialization some of the inherent flexibility associated with feeder-pig production will be lost.

Marketing Systems for Kentucky Feeder Pigs

The primary market outlets for feeder pigs are local auction markets and the popularity of the local auction market as an outlet for Kentucky feeder pigs is due primarily to the geographic convenience of these markets. Also, the local auctions sell pigs on a pen-lot basis with feeder pigs of equal quality sold in each lot.

FEEDER PIG PRICE AND MARKET RECEIPTS TRENDS

Market Receipts Trends

Market receipts of lightweight feeders show a very significant upward trend since 1949. Market receipts of all feeder pigs under 160 pounds at five Central Kentucky auctions have shown a rising trend from 1949 to 1962, an average of 3.10 per cent gain annually (Fig. 2). The increase in feeder-pig receipts was mainly in the lighter weights. Market receipts of feeder pigs weighing less than 80 pounds increased at an average annual rate of 6.77 per cent over the period 1949-62, while receipts of heavier feeders weighing 100-160 pounds decreased over the same period (Table 8). Market receipts of the heavier-weight feeders correspond closely with the observed trend in market receipts for slaughter hogs at the same Central Kentucky markets. The market receipts of slaughter hogs weighing 181-220 pounds decreased by an average of 0.21 per cent annually over the 1949-62 time period.

Trends in hog production² in Kentucky generally were greater than trends in market receipts. Hog numbers in Kentucky show an upward trend at the rate of 1.52 per cent per year over the period 1927-62.³ Nationally, hog production increased at the rate of 0.55 per cent per year during the period 1928-61. Production of lightweight feeders (under 80 pounds) is transcending both the annual state production movements and the national hog-production movements (Table 8).

Trend in Average Weight of Feeder Pigs Marketed

Rudd [9] reported that the average weight of feeder pigs marketed on Central Kentucky markets exhibited a steady downward trend through

²Live weight of hogs produced annually, as published by Statistical Reporting Service, U. S. Department of Agriculture, was used.

³Production statistics for hogs by counties on an annual basis are not available. The nearest approximation is the census figure on number of hogs on farms available every fifth year. For the Central Kentucky area there appears to be no significant change in hog numbers as near as can be estimated from the limited data (1950-62).

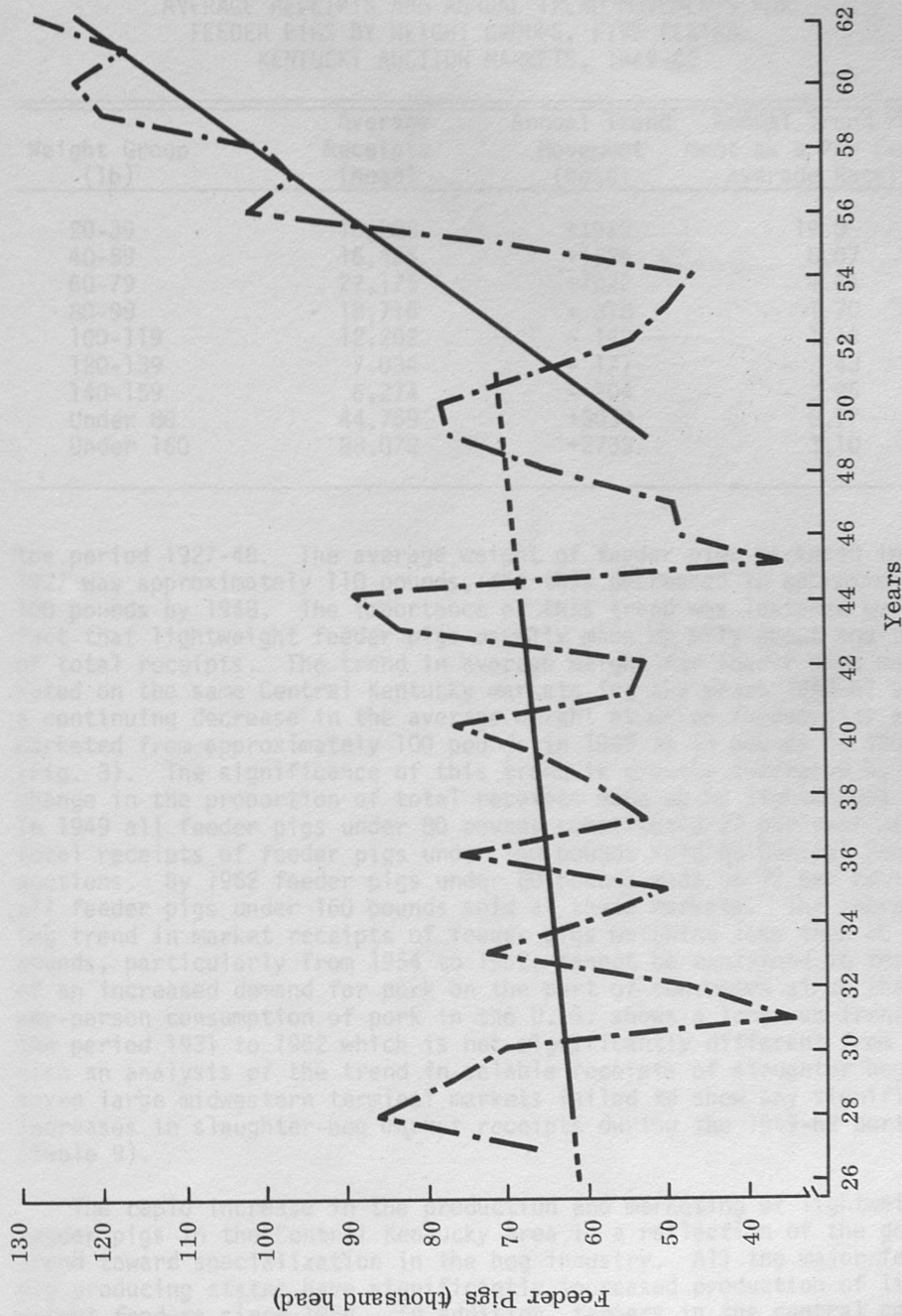


Fig. 2.--Trend of Market Receipts of Feeder Pigs (under 160 lb) at Five Central Kentucky Auction Markets, 1927-1962.

TABLE 8

AVERAGE RECEIPTS AND ANNUAL TREND MOVEMENTS FOR
FEEDER PIGS BY WEIGHT GROUPS, FIVE CENTRAL
KENTUCKY AUCTION MARKETS, 1949-62

Weight Group (lb)	Average Receipts (head)	Annual Trend Movement (head)	Annual Trend Move- ment as a Per Cent of Average Receipts
20-39	10,208	+1922	19.0
40-59	16,464	+1328	8.07
60-79	22,175	+1022	4.61
80-99	18,716	+ 318	1.70
100-119	12,202	- 142	- 1.16
120-139	7,034	- 171	- 2.43
140-159	6,274	- 204	- 3.25
Under 80	44,769	+3030	6.77
Under 160	88,072	+2735	3.10

the period 1927-48. The average weight of feeder pigs marketed in 1927 was approximately 110 pounds, and this decreased to approximately 100 pounds by 1948. The importance of this trend was lessened by the fact that lightweight feeder pigs usually made up only about one tenth of total receipts. The trend in average weight for feeder pigs marketed on the same Central Kentucky markets for the years 1949-62 shows a continuing decrease in the average weight at which feeder pigs are marketed from approximately 100 pounds in 1949 to 68 pounds in 1962 (Fig. 3). The significance of this trend is greatly increased by the change in the proportion of total receipts made up by lightweight feeders. In 1949 all feeder pigs under 80 pounds constituted 27 per cent of the total receipts of feeder pigs under 160 pounds sold on Central Kentucky auctions. By 1962 feeder pigs under 80 pounds made up 72 per cent of all feeder pigs under 160 pounds sold at these markets. The increasing trend in market receipts of feeder pigs weighing less than 80 pounds, particularly from 1954 to 1962, cannot be explained in terms of an increased demand for pork on the part of consumers since the per-person consumption of pork in the U. S. shows a long-run trend for the period 1931 to 1962 which is not significantly different from zero. Also an analysis of the trend in salable receipts of slaughter hogs at seven large midwestern terminal markets failed to show any significant increases in slaughter-hog market receipts during the 1949-62 period (Table 9).

The rapid increase in the production and marketing of lightweight feeder pigs in the Central Kentucky Area is a reflection of the general trend toward specialization in the hog industry. All the major feeder-pig producing states have significantly increased production of lightweight feeders since 1954. In addition, farmers in the central corn-belt

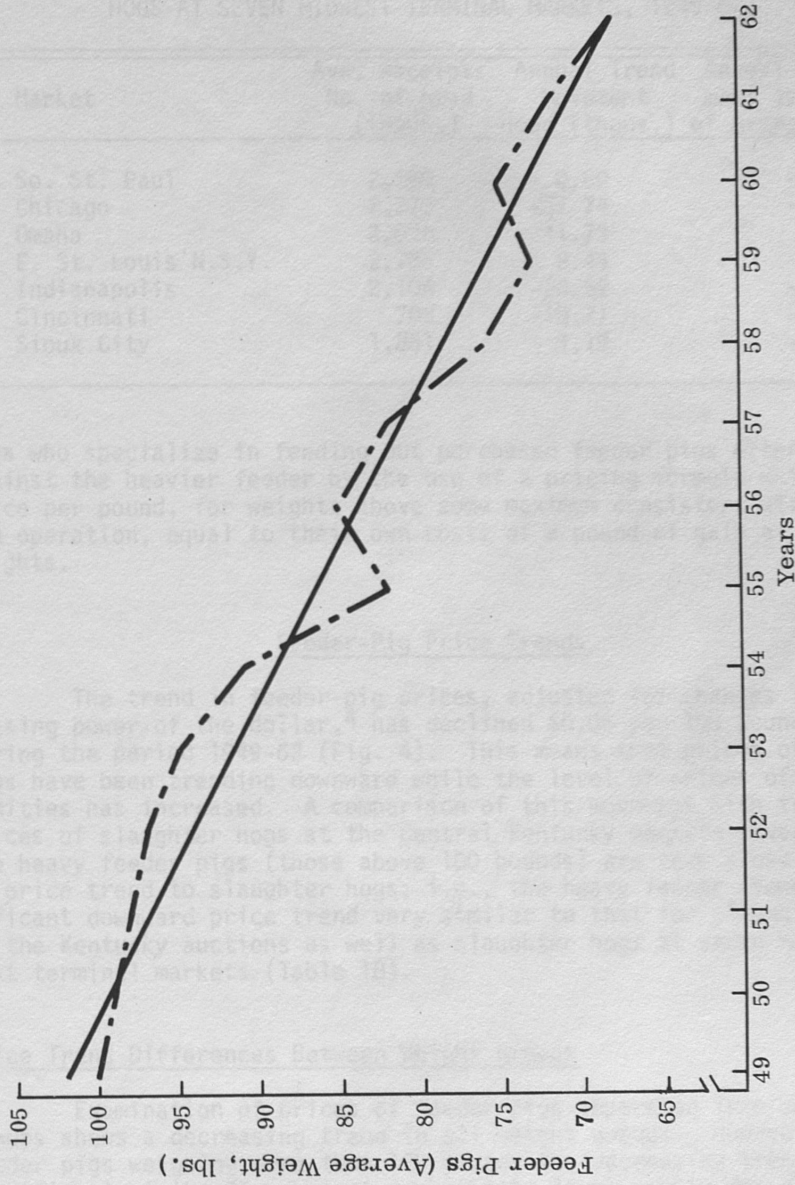


Fig. 3.--Trend of Average Weight of Feeder Pigs (under 160 lb) at Five Central Kentucky Auction Markets, 1949-1962.

TABLE 9

AVERAGE RECEIPTS AND ANNUAL TREND MOVEMENT FOR SLAUGHTER
HOGS AT SEVEN MIDWEST TERMINAL MARKETS, 1949-62

Market	Ave. Receipts No. of head (thous.)	Annual Trend Movement Head (thous.)	Annual Trend Move- ment as a Per Cent of Average Receipts
So. St. Paul	2,580	- 0.60	-0.02
Chicago	2,270	-37.74	-1.66
Omaha	2,078	11.73	0.56
E. St. Louis N.S.Y.	2,766	8.44	0.30
Indianapolis	2,104	-28.52	-1.36
Cincinnati	708	-10.71	-1.51
Sioux City	1,851	- 1.19	- .06

area who specialize in feeding out purchased feeder pigs often discriminate against the heavier feeder by the use of a pricing formula which allows a price per pound, for weights above some maximum consistent with a feeding operation, equal to their own costs of a pound of gain at similar weights.

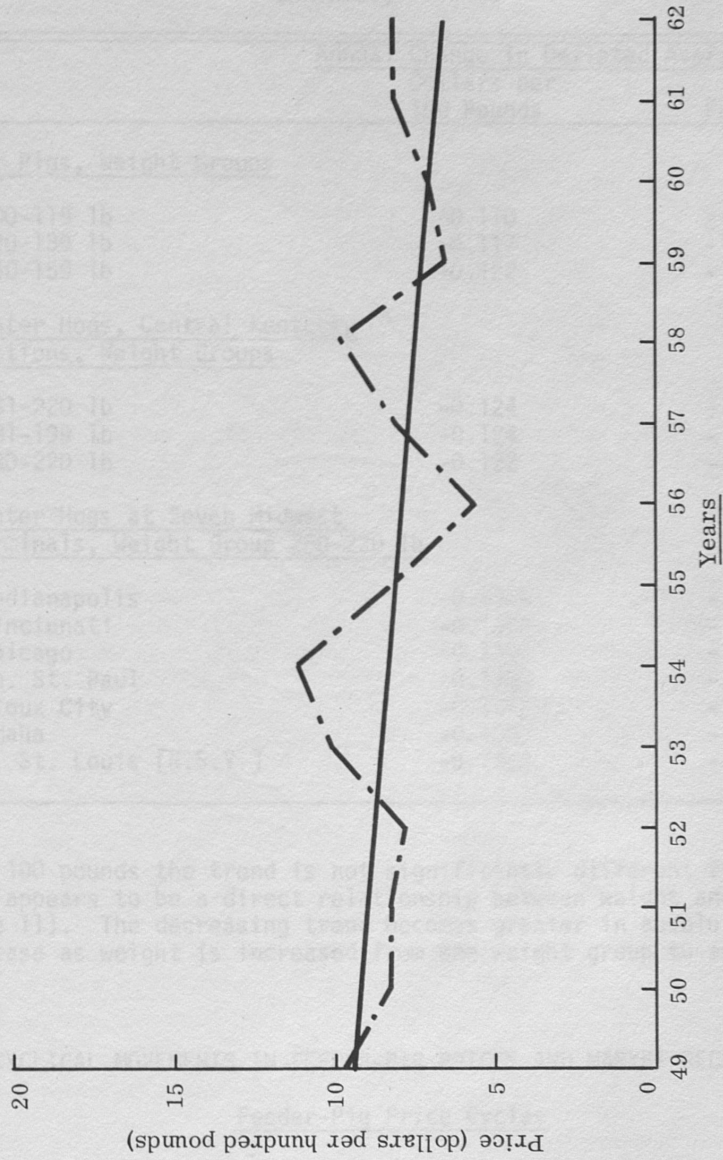
Feeder-Pig Price Trends

The trend in feeder-pig prices, adjusted for changes in the purchasing power of the dollar,⁴ has declined \$0.06 per 100 pounds annually during the period 1949-62 (Fig. 4). This means that prices of feeder pigs have been trending downward while the level of prices of all commodities has increased. A comparison of this movement with trends in prices of slaughter hogs at the Central Kentucky markets reveals that the heavy feeder pigs (those above 100 pounds) are very closely related in price trend to slaughter hogs; i.e., the heavy feeder shows a significant downward price trend very similar to that for slaughter hogs at the Kentucky auctions as well as slaughter hogs at seven major mid-west terminal markets (Table 10).

Price Trend Differences Between Weight Groups

Examination of prices of feeder pigs separated into weight groups shows a decreasing trend in all weight groups. However, for feeder pigs weighing more than 100 pounds the decreasing trend is significant at the 95-per cent probability level, while for all pigs

⁴Adjusted by deflation with the Index of Wholesale Prices of All Commodities (1910-14 = 100).



Deflated by Index of Wholesale Prices of All Commodities (1910-14 = 100)
 Fig. 4.--Trend in Feeder-Pig Prices (under 160 lb) at Five Kentucky Auction Markets, 1949-1962.

TABLE 10

TREND COMPARISON OF ANNUAL AVERAGE (DEFLATED) PRICE OF FEEDER-PIG (OVER 100 POUNDS) WITH SLAUGHTER-HOG PRICE (DEFLATED) AT FIVE CENTRAL KENTUCKY AUCTIONS AND SEVEN MIDWEST TERMINALS, 1949-62

	Annual Change in Deflated Average Price	
	Dollars per 100 Pounds	Percent
<u>Feeder Pigs, Weight Groups</u>		
100-119 lb	-0.110	- 1.38
120-139 lb	-0.117	- 1.57
140-159 lb	-0.122	- 1.72
<u>Slaughter Hogs, Central Kentucky Auctions, Weight Groups</u>		
181-220 lb	-0.124	- 1.64
181-199 lb	-0.124	- 1.64
200-220 lb	-0.122	- 1.62
<u>Slaughter Hogs at Seven Midwest Terminals, Weight Group 200-220 lb</u>		
Indianapolis	-0.1375	- 1.76
Cincinnati	-0.1354	- 1.72
Chicago	-0.1347	- 1.73
So. St. Paul	-0.1360	- 1.77
Sioux City	-0.1340	- 1.74
Omaha	-0.1329	- 1.73
E. St. Louis [N.S.Y.]	-0.1366	- 1.75

under 100 pounds the trend is not significantly different from zero. There appears to be a direct relationship between weight and price trend (Table 11). The decreasing trend becomes greater in absolute value in each case as weight is increased from one weight group to another.

CYCLICAL MOVEMENTS IN FEEDER-PIG PRICES AND MARKET RECEIPTS

Feeder-Pig Price Cycles

It has long been recognized that hog prices have cycles whose periodicity varies from three to eight years. Feeder-pig prices seem

TABLE 11

TREND IN ANNUAL AVERAGE PRICE OF FEEDER PIGS (DEFLATED) AND
SIGNIFICANCE OF TREND AT FIVE CENTRAL KENTUCKY AUCTION
MARKETS, 1949-62

Weight Group, lb	Annual Change in Deflated Ave. Price		Significance of Trend ^a
	Dollars per 100 Pounds	Percent	
40-59	-0.035	-0.37	Not Sig.
60-79	-0.070	-0.78	Not Sig.
80-99	-0.095	-1.12	Not Sig.
100-119	-0.110	-1.38	Sig.
120-139	-0.117	-1.57	Sig.
140-159	-0.122	-1.72	Sig.

^a.05 Probability.

to have had cycles of similar length during the period studied.⁵ Cyclical troughs in feeder-pig prices appear to have occurred in 1950, 1952, 1956, and 1959 (Fig. 5). Peaks appear to have been in 1949, 1951, 1954, and 1958. A cycle averaging about four years in length is indicated.

For purposes of comparison, the cyclical movement of hog prices⁶ at Chicago was computed for the same period (Fig. 5). The feeder-pig cycle very nearly coincides with the Chicago hog price cycle, the only difference being that the cycle for price of slaughter hogs at Chicago shows slightly less amplitude than the feeder-pig price cycle.

Comparison with Cycles in Hog Production

Cycles in the production of hogs were not so pronounced as those found in prices. Live weight of hogs produced annually, as estimated by the U. S. Department of Agriculture, was used to compute cycles⁷ in hog production for the state of Kentucky and for the United States. The similarity between the two cycles is quite evident although cycles were slightly more pronounced for Kentucky (Fig. 6).

⁵Cycles were expressed as the ratio of prices of feeder pigs to the linear trend of feeder-pig prices.

⁶Monthly average price of slaughter hogs weighing 200-220 pounds at Chicago was used.

⁷Cycles are expressed as the ratio of production of hogs to the linear trend of hog production.

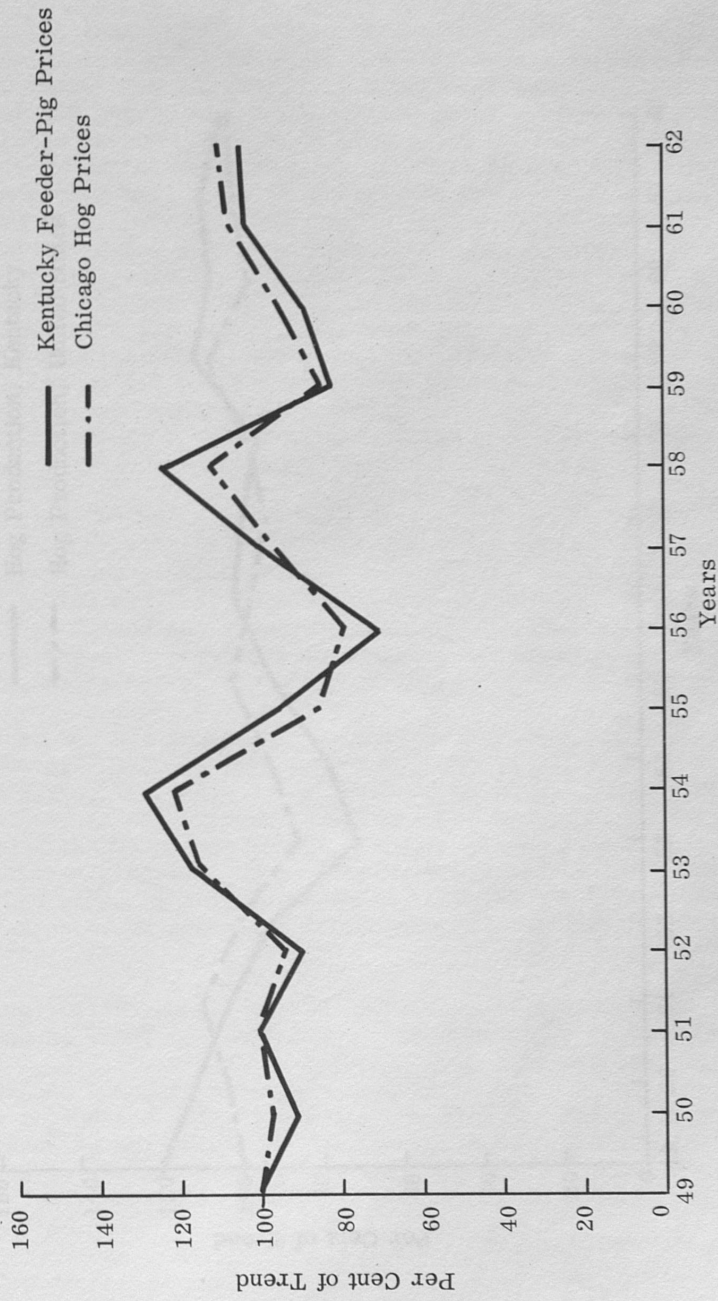


Fig. 5.--Cycles in Feeder-Pig Prices at Five Central Kentucky Auction Markets and Cycles in Hog Prices, Chicago, 1949-1962.

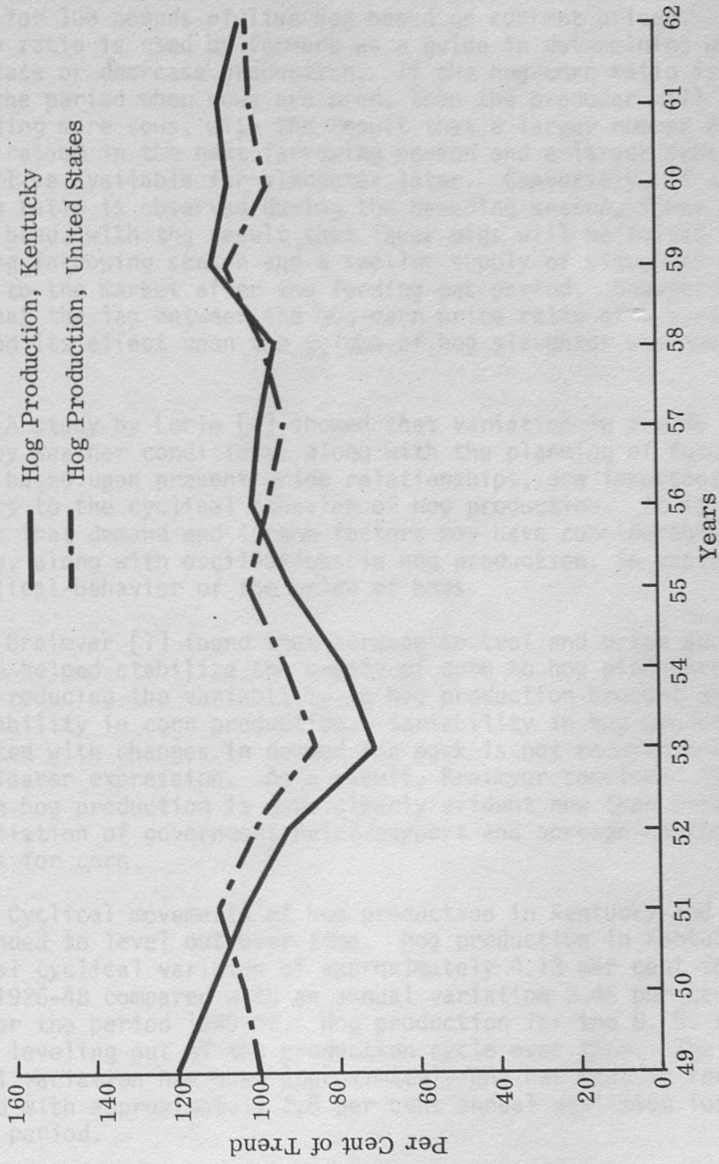


Fig. 6.--Comparison of Cycles in Hog Production in Kentucky and the United States, 1949-1962.

Causes of Cycles in Hog Production

It has long been generally accepted that the movement of the hog-corn price ratio was the major cause of cycles in hog production. This ratio represents the number of bushels of corn that can be exchanged for 100 pounds of live hog based on current prices. The hog-corn ratio is used by farmers as a guide in determining whether to increase or decrease production. If the hog-corn ratio is high during the period when sows are bred, then the producer will respond by breeding more sows, with the result that a larger number of pigs will be raised in the next farrowing season and a larger supply of hogs will be available for slaughter later. Conversely, if a low hog-corn ratio is observed during the breeding season, fewer sows will be bred, with the result that fewer pigs will be raised in the following farrowing season and a smaller supply of slaughter hogs will go to the market after the feeding-out period. Shepherd [10] found that the lag between the hog-corn price ratio of a particular level and its effect upon the volume of hog slaughter was about two years.

A study by Lorie [4] showed that variation in yields of corn caused by weather conditions, along with the planning of future production based upon present price relationships, are important contributors to the cyclical behavior of hog production. It is also apparent that demand and income factors may have considerable importance, along with oscillations in hog production, in explaining the cyclical behavior of the price of hogs.

Breimyer [1] found that acreage control and price support for corn helped stabilize the supply of corn to hog producers, thereby reducing the variability in hog production brought about by variability in corn production. Variability in hog production associated with changes in demand for pork is not removed but is given clearer expression. As a result, Breimyer concluded that a cycle in hog production is more clearly evident now than prior to the initiation of government price-support and acreage-control programs for corn.

Cyclical movements of hog production in Kentucky and the U.S. have tended to level out over time. Hog production in Kentucky shows an annual cyclical variation of approximately 4.13 per cent for the period 1926-48 compared with an annual variation 3.45 per cent of trend for the period 1949-62. Hog production for the U. S. shows a similar leveling out of the production cycle over time. The annual cyclical variation has been approximately one per cent in recent years compared with approximately 2.5 per cent annual variation for the earlier period.

The decreased amplitude of the hog-production cycle can be traced to several factors. Acreage control and price support for

corn has removed one exogenous influence. Trend toward feeder-pig specialization is another important influence. Also, with the advent of new technology, farmers are farrowing a larger percentage of the annual pig crop in the fall (Table 12). Fall farrowings as a percentage of spring farrowings have increased from 78 per cent in 1955 for the East North Central states to 98 per cent in 1967. For the West North Central region during the same period the increase has been from 51 to 83 per cent. The more northern states, as would be expected, show the greatest percentage increases over the time period.

The development of the feeder-pig industry as a viable, independent farm enterprise has also contributed to smoothing out of the hog-production cycle since specialized feeder-pig producers no longer enter and leave the business with such frequency as their counterpart of a bygone time.

Cyclical movements in the receipts of feeder pigs under 160 pounds in weight at five Central Kentucky auctions show a cycle averaging 3.5 years in length but is more variable in amplitude and length than either the cycles for price of feeder pigs or production and price of slaughter hogs.

Cycles in feeder-pig receipts would be expected to be more variable than price since the time required to make adjustments to changes in demand is much greater in the case of market receipts than for price changes.

Cyclical peaks appear to have occurred in 1948, 1956, and 1959 (Fig. 7). Cyclical troughs appear in 1954, 1958, and 1961. Because of the very limited sample of total sales of feeder pigs represented by the market receipts at the Kentucky auctions included in this study, no conclusions can be drawn as to the nature of cycles in feeder-pig marketings generally. Cyclical movements of receipts of feeder pigs show a close similarity with those of slaughter hogs at the same markets, the major difference being that the slaughter hogs showed a peak in 1950 when feeder-pig receipts were continuing to decline and also a peak in 1960, a year after the peak in feeder-pig receipts. The troughs for both cycles appear to come in the same years.

SUMMARY

The substantial increase in feeder-pig production since 1949, especially in the lightweight group, indicates the development of a regular farm enterprise devoted to feeder-pig production. The sale of feeder pigs weighing less than 80 pounds has increased at an average annual rate of 6.77 per cent for the period 1949-62. Development of the feeder-pig industry has been hastened by the growth of specialization in the feeder-pig industry brought on by technological

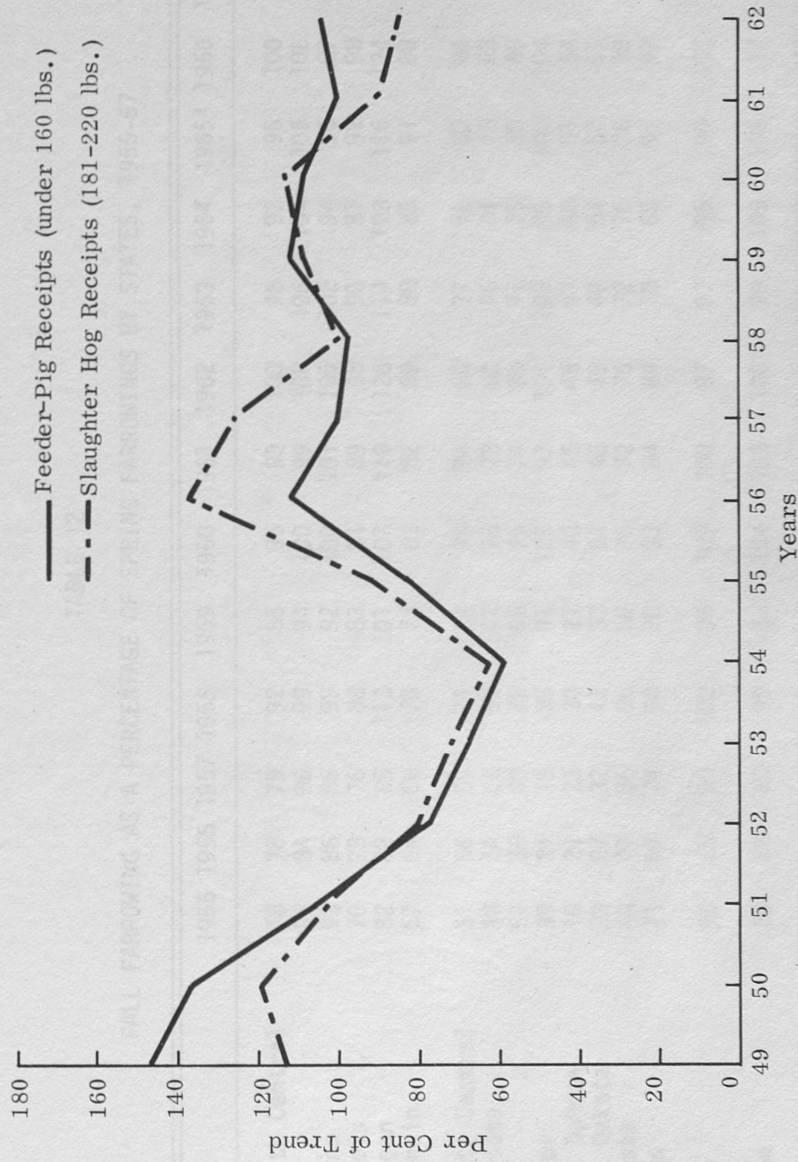


Fig. 7.--Cyclical Movements of Receipts of Feeder Pigs (under 160 lb) Compared with Cyclical Movements of Receipts of Slaughter Hogs, 181-220 lb., Central Kentucky Auctions, 1949-1962.

TABLE 12
FALL FARROWING AS A PERCENTAGE OF SPRING FARROWINGS BY STATES, 1955-67

State	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965 ^a	1966	1967
East North Central	78	78	79	92	86	95	93	100	96	92	96	100	98
Ohio	91	84	86	99	94	100	99	108	106	104	105	106	98
Indiana	93	86	86	99	92	100	101	105	102	94	96	97	98
Illinois	70	73	76	88	83	91	89	95	90	87	92	98	98
Michigan	82	82	85	113	101	107	110	126	114	108	116	124	119
Wisconsin	57	64	68	78	73	83	82	89	88	85	91	98	92
West North Central	51	56	59	71	64	78	74	80	77	76	80	84	83
Minnesota	48	54	54	68	62	78	73	80	76	74	78	83	80
Iowa	51	56	60	72	65	75	74	80	77	75	80	85	82
Missouri	89	81	79	93	91	105	97	107	103	96	100	104	103
North Dakota	18	21	23	30	27	43	45	46	47	48	51	54	54
South Dakota	23	27	32	42	33	51	46	49	49	54	52	51	60
Nebraska	40	47	56	66	56	76	72	75	72	76	78	80	79
Kansas	71	67	74	90	80	93	84	84	78	85	91	97	95
Kentucky	95	88	90	102	95	107	100	97	97	95	99	103	103
Tennessee	89	82	80	99	92	104	103	106	99	105	109	112	99

^aEstimated

Source: *Pig Crops, By States, 1955-1959*, Statistical Bulletin No. 276, U.S.D.A. and supplements.

developments which have made it profitable for farmers to separate the production of feeder pigs from the feeding out of slaughter hogs.

Market receipts of lightweight feeder pigs show a very significant upward trend since 1949. Market receipts of all feeder pigs under 160 pounds at five Central Kentucky markets showed a rising trend from 1949 to 1962, an average of 3.10 per cent gain annually. The increase in feeder-pig receipts was taken up in the lighter weights. Market receipts of feeder pigs weighing less than 80 pounds increased at an average annual rate of 6.77 per cent, while receipts of heavier feeders weighing between 100-160 pounds decreased by 1.99 per cent annually over the period.

Average weights of feeder pigs sold on the Central Kentucky auctions moved downward at the rate of approximately 2 pounds per year from an average weight of 100 pounds for pigs marketed in 1949 to an average weight of 68 pounds for pigs sold in 1962. The chief reason for the shift to lighter-weight pigs has been the demand on the part of slaughter-hog producers for a lightweight, thrifty pig which will make rapid gains in the feedlot.

Trends in prices (deflated) of feeder pigs at the Central Kentucky auctions show that for pigs weighing less than 100 pounds the trend in price was not significantly different from zero, but the downward trend in price of pigs weighing more than 100 pounds is significant. Also, there is a direct relationship between weight and price trend; the decreasing trend becomes greater in each case as weight increased from one weight group to another.

Price of feeder pigs displayed a 4-year cycle from trough to trough and corresponds very closely to cyclical movements of prices of slaughter hogs. Receipt of feeder pigs on the Central Kentucky auctions showed cyclical movements averaging 3.5 years from trough to trough and were closely similar to cycles in slaughter-hog receipts at the same markets.

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