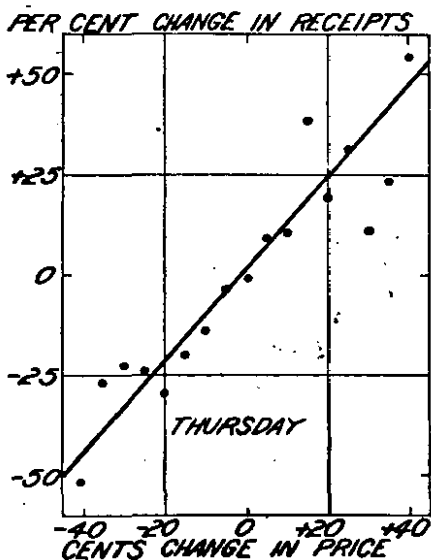


Relation of Daily Prices to the Marketing of Hogs at Chicago

Howard J. Stover



RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM MONDAY TO THURSDAY, CHICAGO, 1921 TO 1928

Day-to-day changes in prices affect the amount of farm products marketed. An advance of 25 cents in the price of hogs from Saturday to Monday increased the receipts of hogs on the following Thursday by 30 per cent

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RELATION OF DAILY PRICES TO THE MARKETING OF HOGS AT CHICAGO¹

HOWARD J. STOVER

INTRODUCTION

Most studies of hog prices in the past have been concerned with their seasonal, cyclical, or secular changes. Relatively little attention has been given to an analysis of the short-time fluctuations, the day-to-day ups and downs.

From the standpoint of the individual farmer, daily price movements are of as much consequence, if not more, as seasonal or even cyclical movements. No better statement of this fact can be made than that appearing in the 1922 Yearbook of the United States Department of Agriculture:²

A fact which is sometimes overlooked or understressed by students of the hog market is that, in general, the long-time average does not materially affect the individual producer. The average man markets hogs once or twice a year. If he happens to have his hogs on the market on a day when some wild rumor of an impending strike, war, or some other upheaval has suddenly depressed prices, that producer usually suffers severe loss. Within a week the market may have recovered the whole amount of the decline, but that is of little consequence or consolation to the man who has sold his hogs on the decline.

Timeliness in marketing is a necessary corollary to timeliness in production. The difference of a single day in the date of shipment of hogs to the central market may mean a difference of as much as a dollar a hundred-weight in the price received. For the individual farmer it often means the difference between a profit and a loss.

The alternation of periods of under- and of over-production of hogs is partly explained by the responses which producers make to price changes. Indirectly, cyclical fluctuations in prices are violent because of such responses. Similarly, the violence of daily price fluctuations is due in part to the responses made by shippers of hogs to the short-time price changes.

The study here reported is an attempt to analyze the relationships existing between daily prices, receipts, and other factors at the Chicago market. Price and supply variations, supply-price relationships, and supply responses to price fluctuations under varying conditions, are of chief concern.

SOURCES OF DATA

Daily top and average prices, receipts, and reshipments were taken from the *Chicago Daily Drovers Journal, Yearbook of Figures*. The eight-year

¹ Also presented to the Faculty of the Graduate School of Cornell University, September, 1930, as a thesis in partial fulfillment of the requirements for the degree of doctor of philosophy.

AUTHOR'S ACKNOWLEDGMENTS. The writer is especially indebted to Professor F. A. Pearson, of the Department of Agricultural Economics and Farm Management at Cornell University, under whose personal direction the study was made. For suggestions and other assistance, acknowledgment is due to J. S. Campbell, of the Chicago Branch Office of the Bureau of Agricultural Economics, United States Department of Agriculture; to W. P. Dolan, of the Saint Paul Live Stock Exchange, South Saint Paul, Minnesota; to C. A. Burmeister, of the Bureau of Agricultural Economics, Washington, D. C.; and to H. R. Tolley, of the Giannini Foundation, Berkeley, California.

² Hog production and marketing, p. 257. By E. Z. Russell and others. U. S. Agr. Dept. Yearbook 1922. 1923.

DAILY HOG PRICES AND MARKET MOVEMENT

Date				Week	Holiday	Consecutive days	Net change past week	Price spread	Average price		Top price		Receipts				Shipments				Price change			Price spread								
Year	Day	Month	Day						Number	Amount	+	Amount	Change	Amount	Change	Y day	Y+1 day	Y+2 day	Y+3 day	Y day	Y+1 day	Y+2 day	Y+3 day	Y+1 day	Y+2 day	Y+3 day	Y+1 day	Y+2 day	Y+3 day			
																														0	1	2
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1							
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2							
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3							
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4							
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5							
6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6							
7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7							
8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8							
9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9							
1	0	0	0	0	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							
				5	080																											

CARD 2 (See page 6)

DAILY PRICES AND THE MARKETING OF HOGS

The methodization finally adopted for relating daily price changes to their receipts was the result of considerable experimentation. Because of the predominating effects of seasonal and cyclical movements in prices and receipts, the influences of short-time changes in prices were especially difficult to measure. Normal daily variations in receipts also complicated the task. A detailed explanation of the methods used is given later in this bulletin (page 42 to 48).

THE CHICAGO HOG MARKET

The hog market in the United States is highly concentrated. Seven markets receive more than half of the hogs sent to public stockyards in this country. Eleven markets receive more than two-thirds, and twenty markets more than three-fourths, of the total number. Chicago alone receives nearly one-fifth of the hogs shipped to public stockyards each year. East Saint Louis, which ranks second in importance, receives less than half the number shipped to Chicago (figure 1). Omaha,

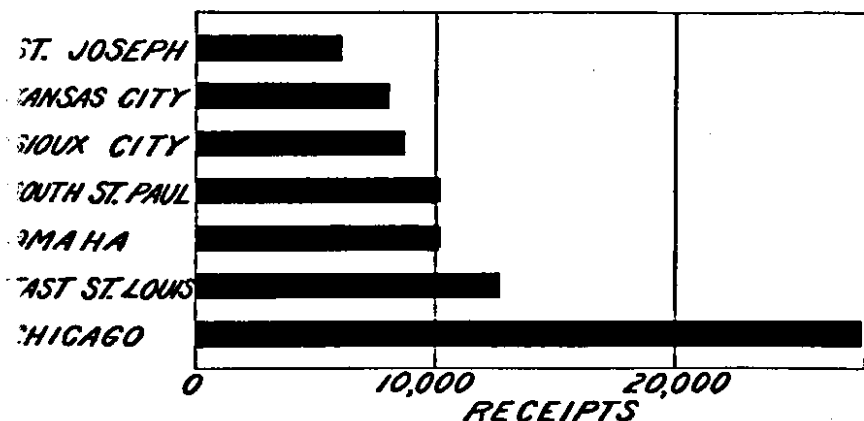


FIGURE 1. AVERAGE DAILY RECEIPTS OF HOGS AT THE SEVEN MOST IMPORTANT PUBLIC STOCKYARDS IN THE UNITED STATES, 1921 TO 1928

The data are based on a 308-day year for all markets: Chicago, 27,800; East Saint Louis, 10,600; Omaha, 10,100; South Saint Paul, 10,100; Sioux City, 8,600; Kansas City, 8,000; Saint Joseph, 6,000. Chicago receives more than twice as many hogs as does East Saint Louis, its most important competitor, and nearly as many as do Omaha, South Saint Paul, and Sioux City together.

South Saint Paul, Sioux City, Kansas City, and Saint Joseph, follow in that order named.

The total number of hogs received at Chicago each year since 1890 is shown in figure 2. From 1890 until about 1910 the trend of receipts was slightly downward, the number received in 1910 being the lowest for the period. Since 1910 the trend has been sharply upward. A record number of 10,460,134 hogs was recorded at the yards in 1923.

Cyclical variations in receipts are superimposed on secular changes, giving the graph a picture of great irregularity. As time goes on, these cycles become more and more pronounced. Receipts in 1925 were approximately 68 per cent of the receipts two years before.

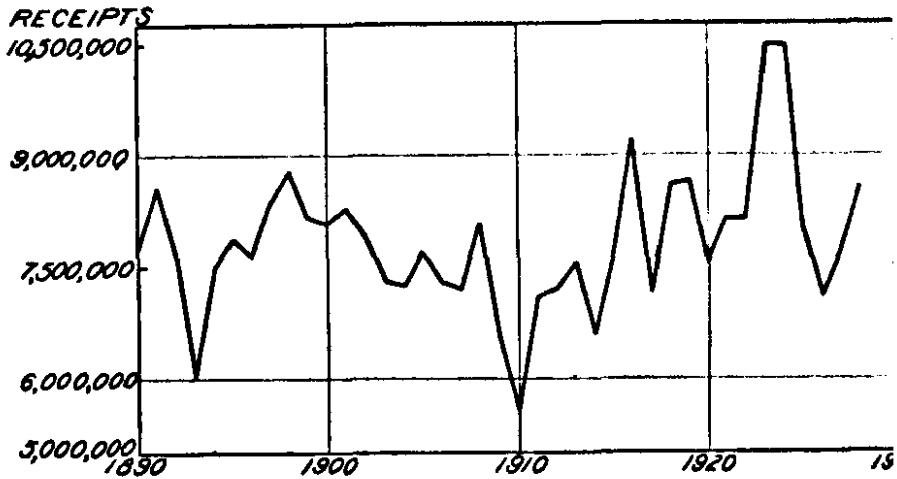


FIGURE 2. YEARLY RECEIPTS OF HOGS AT CHICAGO, 1890 TO 1928

The number of hogs received at Chicago each year is highly variable, reflecting cyclical as well as secular changes. The trend has been upward since about 1910 and the cyclical movements have been more pronounced.

Official stockyard receipts do not include all hogs shipped into Chicago since some are consigned direct to the various packers. This practice of selling hogs at country points and shipping direct to packers has been increasing in late years.

In 1921, 96 per cent of the total number of hogs shipped to Chicago were received at the stockyards for sale on the open market (table 1).

TABLE 1. ANNUAL RECEIPTS OF HOGS AT CHICAGO, 1921 TO 1928

Year	Total number of hogs received at Chicago	Per cent received at yards	Per cent received by packers direct	Per cent packed at Chicago	Per cent shipped to other markets
1921.....	8,486,729	96.0	4.0	74.4	25.6
1922.....	8,562,301	95.3	4.7	78.4	21.6
1923.....	11,031,367	94.8	5.2	78.5	21.5
1924.....	11,068,687	94.3	5.7	73.0	27.0
1925.....	8,478,128	94.3	5.7	71.7	28.3
1926.....	7,543,891	94.0	6.0	72.1	27.9
1927.....	8,184,584	94.4*	5.6*	74.2	25.8
1928.....	9,356,423	91.3*	8.7*	77.1	22.9
Average.....	9,089,014	94.3	5.7	75.0	25.0

*In 1927, 581,354 hogs, and in 1928, 977,464 hogs, which were consigned direct to packers were included in the official yard receipts since they were unloaded, weighed, and yarded at stockyards. If these were included as "directs," the percentages received by packers would be 19.2, respectively.

remaining 4 per cent were shipped direct to packers outside the yards. In 1928, 91.3 per cent of the total Chicago receipts passed through the yards, 80.8 per cent for sale on the open market and 10.5 per cent consigned direct to packers. An additional 8.7 per cent were received

by packers outside the yards. In eight years the number of hogs marketed direct increased from 4 to nearly 20 per cent of the total movement.

In 1925 a larger proportion of the hogs arrived as "directs" in the winter than in the summer (table 2). This was probably owing to the lower cost of buying hogs in the country when the supply was large.

TABLE 2. MONTHLY RECEIPTS OF HOGS AT CHICAGO, 1925

Month	Total number of hogs received at Chicago	Per cent received at yards	Per cent received by packers direct	Per cent packed at Chicago	Per cent reshipped to other markets
January.....	1,363,500	93.9	6.1	70.1	29.9
February.....	978,377	94.1	5.9	70.5	29.5
March.....	628,674	95.1	4.9	66.6	33.4
April.....	567,623	94.8	5.2	71.8	28.2
May.....	561,359	94.3	5.7	69.3	30.7
June.....	667,192	94.9	5.1	75.6	24.4
July.....	538,192	95.1	4.9	72.5	27.5
August.....	470,392	95.2	4.8	77.4	22.6
September.....	472,204	95.0	5.0	75.8	24.2
October.....	605,790	94.2	5.8	74.3	25.7
November.....	718,696	94.3	5.7	71.0	29.0
December.....	906,128	92.7	7.3	71.3	28.7
Average.....	706,511	94.3	5.7	71.7	28.3

Of the hogs received at Chicago, approximately 75 per cent are slaughtered and packed there (table 1). The remaining 25 per cent are reshipped, as live hogs, to other markets.

The proportion of the hogs reshipped is not constant. It is much less on the downward slope of the hog-price cycle than when the prices are rising. In 1923, 21 per cent of the receipts were reshipped, as compared with 28 per cent in 1925.

In March, 1925, more than 33 per cent of the hogs received at Chicago were reshipped to other markets (table 2). In August this percentage was 22.6. The proportion of the receipts which were packed in Chicago was higher in the summer than in the winter.

More than half of the hogs received at Chicago are shipped from country points in Iowa (table 3). An additional 30 per cent come from Illinois. Together, these two States supply nearly 85 per cent of Chicago's hog demands. Wisconsin, which ranks third, ships less than one-fourth of the number of hogs shipped from Illinois.

TABLE 3. PERCENTAGES OF HOGS RECEIVED AT THE UNION STOCK YARDS, CHICAGO, FROM VARIOUS STATES, 1923 TO 1928

Year	Iowa	Illinois	Wisconsin	Minnesota	South Dakota	Indiana	Missouri	Nebraska	O States
1923.....	53.5	30.6	5.7	3.1	4.3	1.1	0.8	0.6	0.3
1924.....	55.3	28.6	6.8	4.1	2.6	1.0	0.7	0.2	0.7
1925.....	55.1	29.7	6.8	4.6	1.8	1.0	0.6	0.3	0.6
1926.....	54.3	30.2	8.2	4.8	0.7	0.8	0.5	0.2	0.3
1927.....	50.3	33.4	9.1	4.6	0.5	0.9	0.8	0.1	0.3
1928.....	50.3	35.0	7.5	4.0	0.8	0.9	0.9	0.3	0.3
Average..	53.3	31.1	7.1	4.1	2.0	1.0	0.7	0.3	0.4

During late years the proportion of Chicago's hog supply received from Iowa has been decreasing and that from Illinois has been increasing (table 3). South Dakota's number decreased from 4.3 per cent of the total in 1923 to 0.5 per cent in 1927. At the same time the number received from Wisconsin increased from 5.7 per cent to 9.1 per cent.

A small proportion, approximately 3 per cent, of the hogs received at the stockyards in Chicago are shipped from other public stockyard. No information is available concerning the States in which such shipment originated. Hence the percentages in tables 3 and 4 are based solely on information relative to hogs shipped direct from country points to Chicago. It seems fairly safe to assume that the relative proportions for each State would be the same in the two cases. At any rate, the total number received from other markets was too small to materially affect the results.

Receipts of hogs from Iowa are larger, in proportion to the total number, in the summer than in the winter months (table 4). In October

TABLE 4. PERCENTAGES OF HOGS RECEIVED AT THE UNION STOCK YARDS, CHICAGO MONTHLY FROM VARIOUS STATES, 1925

Month	Iowa	Illinois	Wisconsin	Minnesota	South Dakota	Indiana	Missouri	Nebraska	Other States
January.....	52.5	32.7	5.5	4.9	2.1	1.2	0.4	0.3	0.8
February.....	56.4	30.9	2.5	5.0	2.4	0.9	0.3	0.2	0.4
March.....	56.9	28.1	4.9	5.4	2.7	0.8	0.3	0.1	0.8
April.....	52.3	31.5	6.4	4.6	2.8	1.1	0.4	0.6	0.3
May.....	56.1	30.5	3.9	4.1	2.0	1.5	0.4	1.2	0.3
June.....	56.7	31.1	3.4	3.7	1.6	1.2	0.9	0.8	0.6
July.....	57.6	29.4	4.4	3.4	2.3	0.9	0.8	0.4	0.8
August.....	59.1	30.3	2.9	2.9	1.3	0.8	1.1	0.5	0.1
September.....	56.0	30.3	6.6	3.1	1.2	1.0	1.2	0.2	0.3
October.....	51.5	25.8	13.7	5.4	1.1	1.0	0.7	0.1	0.7
November.....	56.2	23.9	10.3	6.0	1.2	0.8	0.6	...	1.0
December.....	54.1	29.3	8.8	5.0	1.0	0.7	0.4	...	0.7
Average...	55.1	29.7	6.2	4.6	1.8	1.0	0.6	0.3	0.6

* Less than 0.1 per cent.

1925, they represented 51.5 per cent, and in August 59.1 per cent, of the total supply. Receipts from Illinois varied from 23.9 per cent in November to 32.7 per cent in January.

The influence of the summer surplus milk supply in Wisconsin on the fattening of hogs is reflected in the seasonal variation of receipts at Chicago from that State. In June, 1925, only 3.4 per cent of the hogs received at Chicago came from Wisconsin. In October the percentage was 13.7 or four times as great.

The location of the Chicago market with respect to the producing territory and important competing markets is shown in figure 3. The nearest competing hog market is East Saint Louis, approximately 200 miles distant. South Saint Paul is about 360 miles away, while Omaha, Kansas City, Sioux City, and Saint Joseph lie beyond the 400-mile range. Since most of the hogs shipped to Chicago come from Iowa and western Illinois, a shipping distance of from 200 to 400 miles is the most typical.

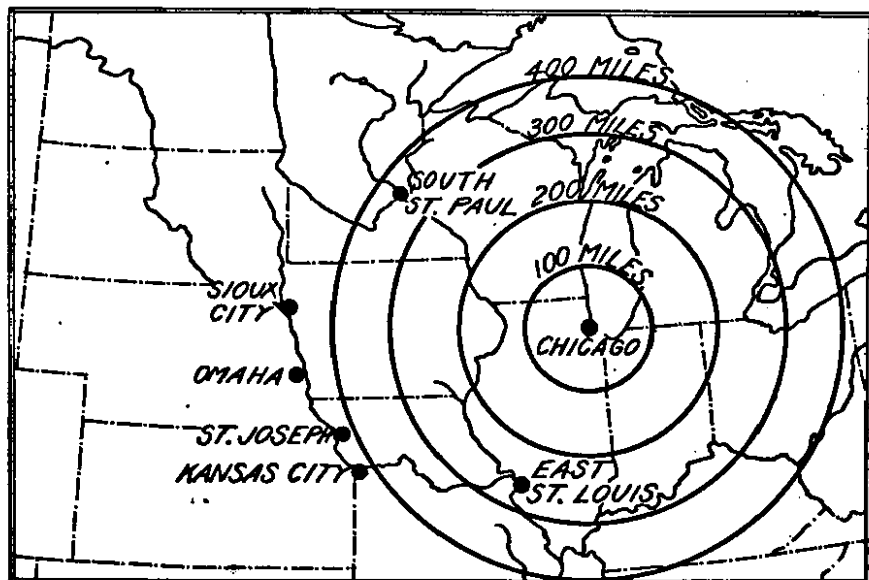


FIGURE 3. LOCATION OF THE CHICAGO HOG MARKET IN RELATION TO THE PRODUCING TERRITORY AND COMPETING MARKETS

Only two of the six important competitors of Chicago are within 400 miles. Most of the hogs shipped to the Chicago market come from territory between the 200- and the 400-mile radius

DAILY VARIATIONS IN RECEIPTS, RESHIPMENTS, NET SUPPLY, AND TOP AND AVERAGE PRICES

NORMAL DAILY VARIATIONS

The problem of a more even distribution of receipts at the larger public stockyards has been discussed many times during the past twenty-five or thirty years. It is argued that the bunching of receipts on one or two days of the week causes sharp price fluctuations and a more or less unstable market situation. Furthermore, it is claimed that this places an undue burden on the entire marketing machinery, transportation agencies, stockyard companies, and the like. Prior to 1915 several attempts were made to bring about a better distribution of receipts, but without much success.

During the World War the United States Food Administration inaugurated a zoning system for regulating the movement of livestock to market. Under this system the livestock-producing territory was divided into zones and certain loading days were assigned to each zone. After the war some opposition to this plan developed, chiefly because other livestock markets were not so regulated. Consequently, the present study covers a period during which the zoning system was partially in operation although not strictly so.

The average number of hogs received at Chicago on Monday during the eight years included in this study was 49,000 (table 5). This represented 29.5 per cent of the total number received during the six market days of the week. Likewise, receipts on Thursday averaged 33,400, or 20.1

TABLE 5. AVERAGE DAILY VARIATIONS IN RECEIPTS, RESHIPMENTS, NET SUPPLY AND TOP AND AVERAGE PRICES, OF HOGS AT CHICAGO DURING THE EIGHT YEARS 1921 TO 1928

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Receipts.....	49,000	30,500	20,700	33,400	26,700	8,900
Reshipments.....	11,700	7,900	5,100	7,500	9,000	2,800
Net supply.....	37,300	22,600	15,600	25,900	17,700	8,100
Receipts (per cent of week).....	29.5	18.3	12.5	20.1	16.1	3.3
Reshipments (per cent of week)...	26.6	18.0	11.6	17.0	20.4	6.4
Net supply (per cent of week).....	30.5	18.5	12.8	21.2	14.3	2.5
Top price (per hundredweight)...	\$10.448	\$10.426	\$10.390	\$10.386	\$10.425	\$10.399
Average price (per hundredweight).....	\$9.752	\$9.728	\$9.715	\$9.728	\$9.746	\$9.718
Spread between top and average price (per hundredweight).....	\$0.696	\$0.698	\$0.675	\$0.658	\$0.679	\$0.684

per cent of the week's receipts. Practically one-half of the week's supply reached Chicago on these two days alone. Saturday's receipts averaged 5900, or less than one-eighth of the number received on Monday.

About three-fourths of the hogs shipped to Chicago were slaughtered there. The remainder were reshipped, as live hogs, to other markets.

PER CENT OF WEEK

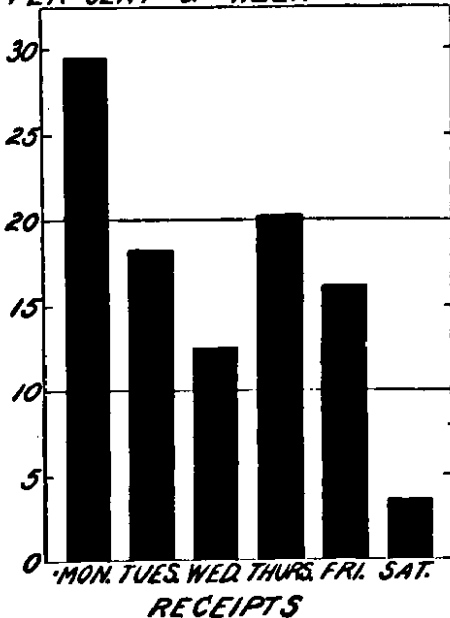


FIGURE 4. AVERAGE DAILY DISTRIBUTION OF WEEKLY RECEIPTS OF HOGS AT CHICAGO, 1921 TO 1928

Nearly one-half of the hogs sent to Chicago arrive on either Monday or Thursday. Very few arrive on Saturday, and less than half as many are received on Wednesday as on Monday.

PER CENT OF WEEK

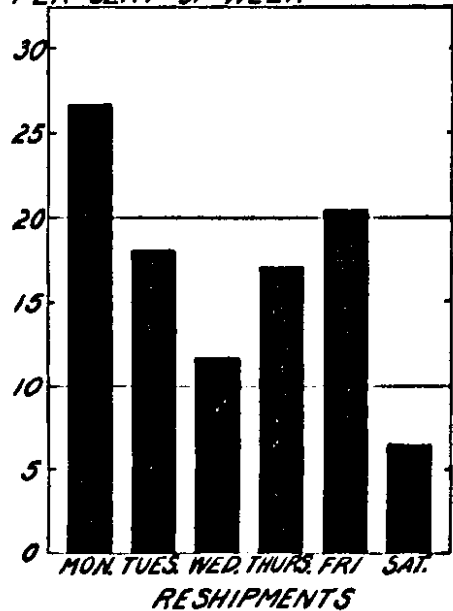


FIGURE 5. AVERAGE DAILY DISTRIBUTION OF WEEKLY RESHIPMENTS OF HOG FROM CHICAGO, 1921 TO 1928

Weekly reshipments of hogs are more evenly distributed than are receipts. A large proportion of Friday's and Saturday's receipts are shipped on the same day to other markets.

A relatively smaller proportion of the hogs received on Monday and on Thursday were reshipped than of those received on the other days of the week. Monday, with 29.5 per cent of the week's receipts, contributed 26.6 per cent of the reshipments, whereas Friday, with 16.1 per cent of the receipts, contributed 20.4 per cent of the reshipments. Nearly one-half of Saturday's receipts were reshipped on the same day to other markets. As a consequence, weekly reshipments of hogs were somewhat more evenly distributed than were receipts (figures 4 and 5). The peak on Monday was lowered, and Friday supplanted Thursday in amount of movement. Saturday gained, largely at the expense of Monday, with the result that its reshipments exceeded one-half of Wednesday's whereas its receipts were less than one-third.

The net supply of hogs remaining for slaughter in Chicago was very unevenly distributed (table 5). More than 30 per cent of the week's supply for Chicago slaughterhouses was purchased at the stockyards on Monday. Only 2.5 per cent was purchased on Saturday. Thursday supplied 21.2 per cent, Tuesday 18.5 per cent, Friday 14.5 per cent, and Wednesday 12.8 per cent.

Weekly receipts were much more unevenly distributed before the war than after (figure 6). In the earlier period, nearly one-third (32.5 per cent) arrived on Monday and an additional 19 per cent arrived on Thursday. These two days, Monday and Thursday, supplied well over half of the week's total supply. Wednesday was the day of lightest receipts before the war, but has been replaced by Saturday in later years. Undoubtedly the zoning system which was in operation during the war has left the hog market with somewhat more evenly distributed receipts.

It has sometimes been contended that heavy receipts on Monday depress prices on that day. However, the facts do not support this contention (table 5). During the eight years from 1921 to 1928, both top and average prices averaged higher on Monday than on any other day of the week. Incidentally this fact may well explain the heavy receipts on Monday.

Average prices, for the period as a whole, were lowest on Wednesday and Saturday, the days of light receipts. In general, the best market days, from the standpoint of prices received, were Monday and Friday. Wednesday and Saturday furnished the poorest market.

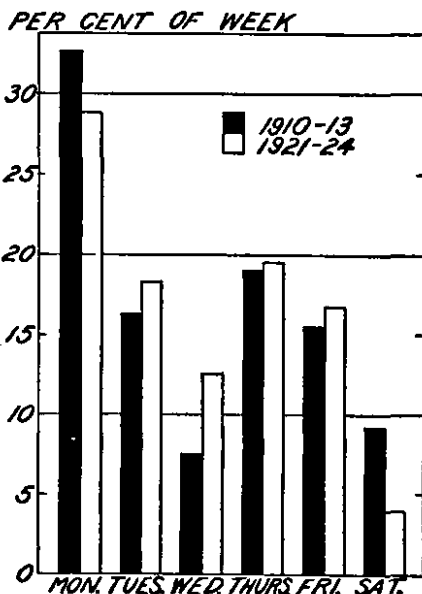


FIGURE 6. COMPARISON OF THE AVERAGE DAILY DISTRIBUTION OF WEEKLY RECEIPTS OF HOGS AT CHICAGO BEFORE AND AFTER THE WAR, 1910 TO 1913 AND 1921 TO 1924

Much progress was made during the war toward a five-day market of more evenly distributed receipts

The spread between top and average prices is a rough measure of the relative dispersion in the prices paid for various lots of hogs on different days. On Tuesday the spread was the greatest and on Thursday it was the least (table 5). In general, the tendency prevailed for the spread to gradually increase from Thursday to Tuesday and to decline from Tuesday to Thursday.

EFFECT OF CYCLE ON DAILY VARIATIONS

Although for the eight-year period Monday's receipts averaged 29.1 per cent of the week's total, this percentage varied considerably from year to year (table 6). In 1921 it was 27.6 per cent and in 1926 it was 31.1 per cent, a difference of 3.5 per cent. This discrepancy is accounted for in part by trends in the total amount of movement. Monday's proportionate share was larger when receipts were falling off rapidly, and smaller when the trend was sharply upward. On Saturdays the reverse was largely the case.

TABLE 6. AVERAGE DAILY RECEIPTS AND PERCENTAGE DISTRIBUTION OF THE WEEKLY RECEIPTS OF HOGS AT CHICAGO, BY YEARS, 1921 TO 1928

Year	Average daily receipts (hundreds)						Per cent of week's receipts					
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1921.....	440	317	193	327	260	57	27.6	19.9	12.1	20.6	16.3	3.6
1922.....	460	291	197	306	250	68	29.3	18.8	12.5	19.5	15.9	4.2
1923.....	567	348	268	396	343	89	28.3	17.3	13.3	19.7	17.1	4.4
1924.....	611	337	252	371	359	69	30.6	16.8	12.6	18.6	18.0	3.4
1925.....	483	274	202	305	261	48	30.7	17.4	12.8	19.4	18.6	3.1
1926.....	429	263	159	287	198	43	31.1	19.1	11.5	20.8	14.4	3.1
1927.....	436	302	171	335	210	42	29.2	20.3	11.4	22.4	14.0	2.6
1928.....	492	310	206	343	252	57	29.6	18.7	12.5	20.6	15.3	3.4
Average.....	490	306	207	334	267	59	29.5	18.8	12.5	20.1	16.1	3.5

The amount of movement, disregarding trends, was also a factor influencing the distribution of receipts. The number of hogs received on Wednesdays and Fridays as related to the number received on Tuesday and Thursdays was larger when the total receipts were large than when they were small.

Reshipments were proportionately much larger on Saturdays when receipts were heavy than when they were light (table 7). On Monday

TABLE 7. AVERAGE DAILY RESHIPMENTS AND PERCENTAGE DISTRIBUTION OF THE WEEKLY RESHIPMENTS OF HOGS AT CHICAGO, BY YEARS, 1921 TO 1928

Year	Average daily reshipments (hundreds)						Per cent of week's reshipments					
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
1921.....	94	82	56	79	79	27	22.5	19.7	13.4	18.9	18.9	6.3
1922.....	100	83	46	69	68	22	28.0	17.4	12.9	16.6	19.0	6.2
1923.....	118	74	61	74	92	39	25.7	16.2	12.3	16.2	20.1	8.5
1924.....	149	97	62	91	127	46	26.1	17.9	10.8	15.9	22.2	8.0
1925.....	130	85	46	76	97	31	27.9	18.3	9.9	16.3	20.9	6.7
1926.....	120	73	46	72	76	21	29.4	17.9	11.3	17.7	18.6	5.1
1927.....	106	78	43	75	90	17	25.9	19.1	10.5	18.3	22.0	4.2
1928.....	116	77	44	69	96	17	27.7	18.4	10.5	16.5	22.9	4.9
Average.....	117	79	51	76	90	28	26.6	18.0	11.6	17.0	20.4	6.9

reshipments varied from 22.5 per cent of the week's total in 1921 to 29.4 per cent in 1926—a difference of 6.9 per cent.

Owing to the relatively large proportion of Saturday's receipts which were reshipped on the same day to other markets when receipts were heavy, the net supply of hogs in Chicago at such times was very low (table 8). In 1925 only 1.5 per cent of the week's net supply was in Chicago on Saturday. This was offset by relatively larger supplies on Monday and Wednesday.

TABLE 8. AVERAGE DAILY NET SUPPLY AND PERCENTAGE DISTRIBUTION OF THE WEEKLY NET SUPPLY OF HOGS AT CHICAGO, BY YEARS, 1921 TO 1928

Year	Average daily net supply (hundreds)						Per cent of week's net supply					
	Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day	Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day
1921.....	346	235	137	248	181	80	29.4	20.0	11.6	21.1	15.4	2.5
1922.....	360	229	151	247	182	46	29.5	18.9	12.4	20.3	15.0	3.8
1923.....	449	274	207	322	251	50	28.9	17.7	13.3	20.7	16.2	3.2
1924.....	462	240	190	280	232	23	32.4	16.8	13.3	19.6	16.3	1.6
1925.....	353	189	156	229	164	17	31.9	17.0	14.1	20.7	14.8	1.5
1926.....	309	190	113	215	122	22	31.8	19.6	11.6	22.1	12.6	2.3
1927.....	330	224	128	260	120	25	30.4	20.6	11.8	23.9	11.0	2.3
1928.....	376	233	164	274	156	40	30.3	18.7	13.2	22.0	12.6	2.2
Average.....	373	226	156	259	177	31	30.5	18.5	12.8	21.2	14.5	2.5

Monday's net supply of hogs fluctuated between an average of 28.9 per cent of the week's total in 1923 and 32.4 per cent in 1924, a difference of 3.5 per cent. On Friday the variation was from 11.0 to 16.3 per cent, a range of 5.3 per cent.

Although both top and average prices for the period as a whole averaged highest on Monday, individual years showed some variations. From the standpoint of average prices, Monday furnished the best market for hogs in three years, Friday in three years, Tuesday in one year, and Saturday in one year (table 9). In most cases the best average-price days were also the best top-price days.

The days of lowest prices were generally either Wednesday or Saturday. Average prices were lowest on Saturday in three and on Wednesday

TABLE 9. AVERAGE DAILY TOP AND AVERAGE PRICES OF HOGS AT CHICAGO, BY YEARS, 1921 TO 1928

Year	Average daily top prices (per hundredweight)						Average daily average prices (per hundredweight)					
	Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day	Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day
1921.....	\$ 9.376	\$ 9.344	\$ 9.322	\$ 9.265	\$ 9.289	\$ 9.312	\$8.597	\$8.567	\$8.560	\$8.571	\$8.584	\$8.532
1922.....	10.026	9.997	9.963	9.985	10.016	10.003	9.348	9.314	9.303	9.347	9.368	9.345
1923.....	8.167	8.189	8.135	8.120	8.129	8.121	7.653	7.666	7.643	7.641	7.637	7.602
1924.....	8.621	8.657	8.653	8.641	8.669	8.686	8.163	8.165	8.173	8.164	8.206	8.210
1925.....	12.664	12.629	12.603	12.613	12.661	12.605	12.060	12.045	12.029	12.056	12.080	12.039
1926.....	13.648	13.598	13.529	13.562	13.672	13.619	12.389	12.338	12.350	12.395	12.405	12.361
1927.....	11.039	10.968	10.927	10.927	10.963	10.887	10.219	10.166	10.144	10.133	10.148	10.111
1928.....	10.045	10.029	9.991	9.973	10.003	9.955	9.588	9.563	9.523	9.511	9.541	9.532
Average.....	\$10.448	\$10.426	\$10.390	\$10.386	\$10.425	\$10.399	\$9.752	\$9.728	\$9.715	\$9.726	\$9.746	\$9.715

in two of the eight years. Wednesday had the lowest top prices in the years, and Saturday in two years.

The premium paid in some years on certain days of the week was large. In 1927 an average of 10.8 cents more per hundredweight was paid for hogs on Monday than on Saturday. In 1924 the premium paid on Saturday over Monday was 4.7 cents per hundredweight.

The discrepancy between top prices on different days of the week was even greater than that between average prices. In 1927 Monday top-price premium over Saturday's price was 15.2 cents per hundredweight. In 1924 the top price paid on Saturday averaged 6.5 cents per hundredweight over Monday's price.

These differentials can be explained in part by the trend of prices during each of the years. However, in 1927 trend can account for no more than a 6.5-cent differential. The actual differences were 10.8 and 15.2 cents for average and top prices, respectively, leaving approximate differentials of 4.3 and 8.7 cents to be accounted for.

With the elimination of the trend factor for 1924, the differentials for average prices would be reversed, giving Monday a premium over Saturday. The top-price differential would be approximately offset by price trends.

For the period as a whole, price trends have very little effect on the existing discrepancies between prices on different days of the week. For individual years, however, distinct price trends have an important influence.

EFFECT OF SEASON ON DAILY VARIATIONS

Hog production and marketing are highly seasonal. There are two distinct periods of heavy market movement, reflecting, respectively, spring and fall-farrowing practices. The first peak is in June, when the amount of movement is approximately 118 per cent of that in April and 141 per cent of that in September. The second peak, and by far the highest, is in December and January. Average daily receipts at Chicago in December are more than double the receipts in September. April and September are months of light receipts and relatively high prices.

The time of year also is a factor affecting daily variations. The proportionate number of hogs received and reshipped on different days of the week varies with the season. Larger price premiums on certain days are paid in some months than in others.

Although Monday's receipts for the entire period averaged 29.5 per cent of the week's receipts, they averaged about 33 per cent in April and May and 25 per cent in November (table 10). In general, receipts on Monday were proportionately heavier in the spring and summer than in the fall and winter.

Tuesday's receipts varied from a low of 15.2 per cent in March to 21.1 per cent in November—a difference of 6.3 per cent. Receipts on Thursday were not so variable, the difference between the high and the low being only 4.3 per cent on a somewhat higher base.

Both Tuesday's and Thursday's receipts were high in the fall and winter, offsetting the reverse situation on Monday and Wednesday. Friday's share of the week's receipts varied with the total amount of movement, being higher when receipts were heavy than when they were light.

TABLE 10. AVERAGE DAILY RECEIPTS AND PERCENTAGE DISTRIBUTION OF WEEKLY RECEIPTS OF HOGS AT CHICAGO, BY FOUR-WEEK PERIODS, 1921 TO 1928

Period	Weeks	Average daily receipts (hundreds)						Per cent of week's receipts					
		Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day	Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day
1.....	1-4	591	468	262	522	406	82	25.4	20.1	11.2	23.4	17.4	3.5
2.....	5-8	655	392	236	408	369	80	30.6	18.3	11.0	19.1	17.3	3.7
3.....	9-12	545	259	205	336	290	94	32.1	15.2	12.0	19.8	17.1	3.8
4.....	13-16	454	229	173	255	217	52	32.9	16.6	12.5	18.5	15.7	3.8
5.....	17-20	460	228	177	266	208	50	33.1	16.4	12.7	19.2	15.0	3.6
6.....	21-24*	498	270	221	313	247	56	31.0	16.8	13.8	19.5	15.4	3.5
7.....	25-28*	515	277	206	315	259	52	31.7	17.1	12.7	19.4	15.9	3.2
8.....	29-32	447	228	187	260	220	45	32.2	16.4	13.6	18.8	15.9	3.3
9.....	33-36*	383	226	173	220	171	40	31.8	18.6	14.3	18.1	14.1	3.1
10.....	37-40	329	219	163	234	168	36	28.6	19.1	14.2	20.4	14.6	3.3
11.....	41-44	388	284	189	279	227	57	27.3	19.9	13.3	19.6	15.9	4.0
12.....	45-48*	489	426	237	444	318	71	24.6	21.5	11.9	22.4	16.0	3.6
13.....	49-52*	629	504	278	486	379	87	26.6	21.3	11.8	20.6	16.0	3.7
Average.....	490	305	207	334	267	59	29.5	18.3	12.5	20.1	16.1	3.5

* Only three weeks included, because of holidays.

Reshipments of hogs from Chicago were generally relatively heavy when receipts were heavy. However, there were several exceptions. Receipts on Thursday were lighter in October than for the period as a whole, but reshipments were heavier (tables 10 and 11). The same was true on Tuesday in July.

TABLE 11. AVERAGE DAILY RESHIPMENTS AND PERCENTAGE DISTRIBUTION OF THE WEEKLY RESHIPMENTS OF HOGS FROM CHICAGO, BY FOUR-WEEK PERIODS, 1921 TO 1928

Period	Weeks	Average daily reshipments (hundreds)						Per cent of week's reshipments					
		Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day	Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day
1.....	1-4	176	131	85	185	152	59	23.8	17.8	11.5	18.3	20.6	8.0
2.....	5-8	180	125	76	121	137	44	26.4	18.3	11.1	17.7	20.1	6.4
3.....	9-12	145	88	61	86	108	36	27.7	16.8	11.6	16.4	20.6	6.9
4.....	13-16	110	63	41	52	76	21	30.3	17.4	11.3	14.3	20.9	5.8
5.....	17-20	90	52	35	45	62	18	29.8	17.2	11.6	14.9	20.5	6.0
6.....	21-24*	85	54	35	51	64	16	27.9	17.7	11.5	16.7	21.0	5.2
7.....	25-28*	112	67	42	54	70	18	30.8	18.4	11.6	14.9	19.3	5.0
8.....	29-32	104	61	44	60	74	19	28.7	16.9	12.2	16.6	20.4	5.2
9.....	33-36*	89	57	41	48	59	16	28.7	18.4	13.2	15.5	19.0	5.2
10.....	37-40	70	45	33	49	58	16	25.8	16.6	12.2	18.1	21.4	5.9
11.....	41-44	80	56	37	58	75	23	24.3	17.0	11.3	17.6	22.8	7.0
12.....	45-48*	117	98	61	99	109	30	23.2	19.5	10.1	19.6	21.6	6.0
13.....	49-52*	151	128	75	111	128	44	23.7	20.1	11.8	17.4	20.1	6.9
Average.....	117	79	61	75	90	28	26.6	18.0	11.6	17.0	20.4	6.4

* Only three weeks included, because of holidays.

In January, 8 per cent of the hogs reshipped left Chicago on Saturday. In July this percentage was much less—5 per cent. A larger proportion was reshipped on Saturday in the winter than in the summer. Undoubtedly the summer heat, with no market on the following day, was a contributing factor.

Since a larger proportion of Saturday's hog receipts was reshipped in the winter than in the summer, it naturally follows that the proportion remain-

ing for slaughter in Chicago was less. In January, Saturday furnished only 1.4 per cent of the supply of hogs for Chicago slaughterhouse (table 12). In June and October the percentage was 3.1.

TABLE 12. AVERAGE DAILY NET SUPPLY AND PERCENTAGE DISTRIBUTION OF THE WEEKLY NET SUPPLY OF HOGS AT CHICAGO, BY FOUR-WEEK PERIOD 1921 TO 1928

Period	Weeks	Average daily net supply (hundreds)						Per cent of week's net supply					
		Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day	Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day
1.....	1-4	415	337	177	387	264	23	26.1	21.2	11.1	24.2	15.9	1.4
2.....	5-8	475	267	160	287	232	36	32.6	18.2	11.0	19.7	15.9	2.1
3.....	9-12	400	171	144	250	182	28	34.0	14.6	12.2	21.2	15.8	2.0
4.....	13-16	344	166	132	203	141	31	32.8	16.2	13.0	20.0	13.9	3.1
5.....	17-20	370	176	142	221	146	32	34.0	16.2	12.1	20.2	12.4	2.0
6.....	21-24*	413	216	186	262	183	40	31.8	16.6	14.2	20.1	14.1	2.1
7.....	25-28*	403	210	164	261	189	34	32.0	16.6	12.0	20.7	16.0	2.1
8.....	29-32	343	167	143	200	146	26	33.6	16.3	14.0	19.5	14.2	2.1
9.....	33-36*	294	169	132	172	112	24	32.6	18.7	14.6	19.0	12.4	2.1
10.....	37-40	259	174	130	185	110	20	29.5	19.8	14.8	21.1	12.8	2.1
11.....	41-44	308	228	152	221	152	34	28.1	20.8	12.9	20.2	13.9	3.1
12.....	45-48*	372	328	186	345	209	41	25.1	22.1	12.6	23.2	14.1	2.1
13.....	49-52*	478	376	208	375	251	43	27.7	21.6	11.6	21.7	14.5	2.1
Average.....		378	226	166	269	177	31	30.5	18.3	12.8	21.2	14.5	2.1

* Only three weeks included, because of holidays.

Monday's net supply varied from 25.1 per cent of the week's total in November to 34.0 in March and May—a difference of 8.9 per cent. As in the case of receipts, the proportions were high in the spring and summer months and low in the fall and winter.

Since prices and receipts are inversely correlated, the peaks of heavy receipts correspond with the troughs of low prices. However, seasonal price variations do not exhibit as great a range as do supply fluctuations. Whereas receipts in December were approximately 142 per cent of the average for the year, the average price in December was about 90 per cent. In September, with receipts 70 per cent of the average for the year, the average price was 104 per cent.

Top prices change with the season more than do average prices. In September the top prices were 108 per cent of the average for the year and in December they were 88 per cent. For average prices these percentages were 104 and 90, respectively.

The spread between the top and the average prices of hogs was greatest in August and September and least in May and June (figure 7). From December to April and from June to September, as receipts decreased the spread between the two prices widened. It narrowed again as the supply again became plentiful.

This spread is largely a reflection of quality differences in the hogs marketed during different seasons of the year. When the spread was wide as in August and September, the bulk of the supply was of rather poor quality—breeding stock, and the like—for which relatively low prices were paid. These lowered the average price, but had little effect on the top price which is the price paid for a few lots of choice hogs.

From the standpoint of average prices, Monday furnished the best market for hogs in five of the thirteen four-week periods into which the

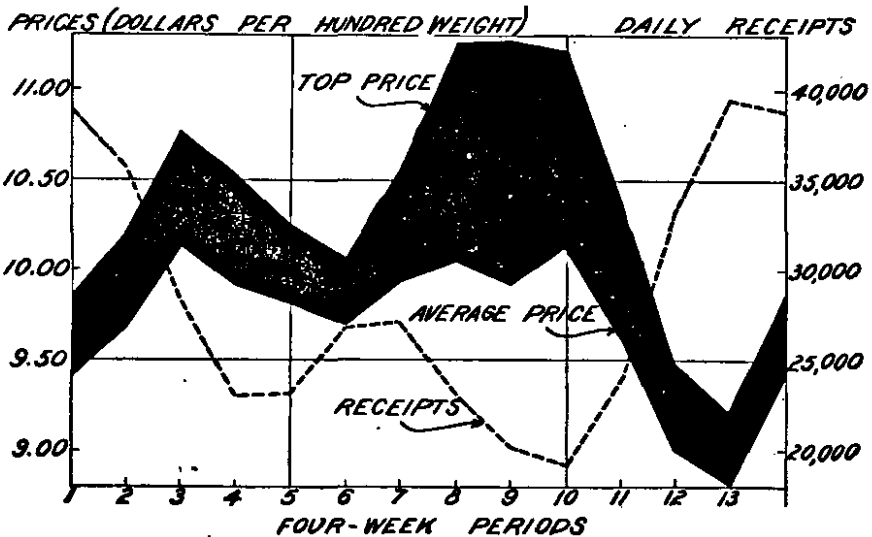


FIGURE 7. AVERAGE DAILY RECEIPTS, AND TOP AND AVERAGE PRICES, OF HOGS AT CHICAGO, BY FOUR-WEEK PERIODS, 1921 TO 1928

The spread between the top and the average prices of hogs widens as the receipts decline, and narrows again when the movement is heavy

year was divided (table 13). Friday had the highest prices in five and Saturday in the three remaining periods.

TABLE 13. AVERAGE DAILY TOP AND AVERAGE PRICES OF HOGS AT CHICAGO, BY FOUR-WEEK PERIODS, 1921 TO 1928

Period	Weeks	Average daily top prices (per hundredweight)						Average daily average prices (per hundredweight)					
		Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day	Mon-day	Tues-day	Wednes-day	Thurs-day	Fri-day	Satur-day
1	1-4	\$ 9.820	\$ 9.838	\$ 9.809	\$ 9.801	\$ 9.881	\$ 9.888	\$9.381	\$9.409	\$9.392	\$9.389	\$9.427	\$9.445
2	5-8	10.166	10.184	10.139	10.208	10.233	10.259	9.639	9.677	9.650	9.711	9.709	9.716
3	9-12	10.731	10.766	10.702	10.727	10.809	10.802	10.106	10.142	10.134	10.153	10.158	10.142
4	13-16	10.597	10.534	10.484	10.503	10.506	10.495	9.952	9.903	9.963	9.930	9.919	9.912
5	17-20	10.258	10.262	10.225	10.212	10.275	10.247	9.811	9.809	9.802	9.816	9.856	9.847
6	21-24*	10.067	10.071	10.042	10.038	10.092	10.060	9.721	9.706	9.683	9.683	9.723	9.704
7	25-28*	10.473	10.523	10.550	10.579	10.615	10.594	9.891	9.908	9.935	9.977	9.985	9.925
8	29-32	11.234	11.300	11.281	11.225	11.264	11.209	10.102	10.102	10.067	10.042	10.045	9.960
9	33-36*	11.294	11.246	11.179	11.252	11.352	11.273	9.942	9.889	9.856	9.952	10.021	9.892
10	37-40	11.352	11.273	11.191	11.148	11.198	11.117	10.178	10.114	10.108	10.119	10.175	10.096
11	41-44	10.608	10.481	10.417	10.331	10.312	10.281	9.800	9.681	9.638	9.598	9.588	9.552
12	45-48*	9.629	9.490	9.498	9.427	9.394	9.362	9.121	9.021	9.023	8.962	8.960	8.935
13	49-52*	9.204	9.177	9.181	9.206	9.238	9.227	8.812	8.783	8.793	8.810	8.833	8.844
Average		\$10.448	\$10.426	\$10.390	\$10.386	\$10.425	\$10.399	\$9.782	\$9.728	\$9.715	\$9.728	\$9.746	\$9.715

* Only three weeks included, because of holidays.

Wednesday, Saturday, and Monday had the lowest average prices in each of four periods. Lowest prices were paid on Tuesday in December. Saturday had the lowest top prices in four periods, Wednesday in four periods, Thursday in three periods, and Monday and Tuesday in one period each.

For individual periods, the seasonal variation in hog prices was an important factor contributing to variations in the prices paid on different days of the week. From September to November, when average prices were falling at the rate of $2\frac{1}{3}$ cents per hundredweight per market day and top prices at the rate of $3\frac{3}{4}$ cents, prices on Monday from 14 to 22 cents higher than those on Saturday would be expected.

The premium paid for hogs on certain days of the week was often very great. In October, Monday's top price exceeded that of Saturday by 32.7 cents per hundredweight. The average-price differential was 24.8 cents. In the preceding period, the tenth, the differentials for top and average prices were 23.5 and 8.6 cents, respectively.

Price trends cannot possibly explain such large differences in the prices paid for hogs on different days of the week. Some other factor or factors must have affected the situation. Apparently the number of hogs received on Monday in September and October was in some way limited, for the supplies were decidedly inadequate.

DAILY VARIABILITY OF PRICES

AVERAGES FOR THE PERIOD

One measure of daily-price variability is an average of changes from one day to the next, taken without regard to the direction of the change. These results may then be made comparable for different days by expressing the average change as a percentage of the average price on the day of the change. The percentages so obtained may be referred to as coefficients of daily-price variability.

Both top and average prices undergo many changes from day to day. These variations are greatest from Saturday to Monday and least from Friday to Saturday (table 14). For the period as a whole, average prices changed 15 cents a hundredweight from Saturday to Monday and only 8.5 cents from Friday to Saturday. Prices generally changed in about the same amount from Monday to Tuesday and from Wednesday to Thursday, although top prices changed more than did average prices.

TABLE 14. AVERAGE DAILY CHANGES, AND COEFFICIENTS OF VARIABILITY OF DAILY CHANGES, IN TOP AND AVERAGE PRICES OF HOGS AT CHICAGO, 1921 TO 1928

	Average daily changes (cents per hundredweight)		Coefficients of variability	
	In top prices	In average prices	In top prices	In average prices
Saturday to Monday.....	14.9	15.0	1.43	1.54
Monday to Tuesday.....	13.4	12.8	1.29	1.32
Tuesday to Wednesday.....	12.9	11.9	1.24	1.22
Wednesday to Thursday.....	13.7	12.7	1.32	1.31
Thursday to Friday.....	12.5	12.1	1.20	1.24
Friday to Saturday.....	10.0	8.5	0.96	0.87

The coefficients of variability indicate that both top and average prices fluctuated about 1.25 per cent of the price from day to day (table 14). From Saturday to Monday the average price changed 1.54 per cent, and from Friday to Saturday 0.87 per cent. Average prices fluctuated more than did top prices from Saturday to Monday, Monday to Tuesday, and Thursday to Friday, but less on the other three days.

EFFECT OF CYCLE ON DAILY VARIABILITY

The variations in hog prices from day to day are somewhat dependent on the phase of the hog-price cycle. In 1921, average prices changed 20 cents per hundredweight from Saturday to Monday (table 15). In 1928 the corresponding changes averaged 12 cents. Top-price changes from Saturday to Monday fluctuated between 12.4 cents in 1928 and 16.9 cents in 1925.

TABLE 15. AVERAGE DAILY CHANGES IN TOP AND AVERAGE PRICES OF HOGS AT CHICAGO, BY YEARS, 1921 TO 1928

Year	Top prices						Average prices					
	Satur- day to Mon- day	Mon- day to Tues- day	Tues- day to Wednes- day	Wednes- day to Thurs- day	Thurs- day to Fri- day	Fri- day to Satur- day	Satur- day to Mon- day	Mon- day to Tues- day	Tues- day to Wednes- day	Wednes- day to Thurs- day	Thurs- day to Fri- day	Fri- day to Satur- day
	(Cents per hundredweight)											
1921	26.8	16.6	16.3	18.5	12.9	11.6	20.0	17.0	16.5	15.9	16.3	13.0
1922	13.2	12.9	11.2	11.1	10.7	9.6	15.1	12.8	10.3	12.8	11.1	10.6
1923	14.0	11.6	12.4	11.3	11.9	9.5	13.6	10.0	10.4	10.1	10.9	7.8
1924	14.1	11.5	10.9	12.0	10.5	6.3	15.0	11.9	11.4	11.8	10.9	6.7
1925	16.9	15.2	14.5	16.6	16.3	11.0	17.8	13.6	14.6	16.6	15.5	10.2
1926	16.0	14.4	15.4	16.1	17.0	12.1	12.6	13.2	13.1	13.8	12.8	8.9
1927	15.3	12.2	11.8	11.3	10.2	9.0	13.1	10.2	8.6	9.8	8.9	4.8
1928	12.4	12.7	11.0	12.6	10.2	10.7	12.0	12.7	10.5	10.9	11.0	6.3
Average	14.9	13.4	12.9	13.7	12.6	10.0	15.0	12.8	11.9	12.7	12.1	8.5

When these averages are expressed as percentages of the respective prices, which removes the effect of differences in the level of prices, both top and average prices changed the most from Saturday to Monday in 1921 and the least in 1926 (table 16). On this basis the fluctuations in the average price from Saturday to Monday were more than twice as great in 1921 as in 1926. Fluctuations in the average price from Friday to Saturday in 1921 were more than three times as great as they were in 1927.

In general, price changes from day to day, as expressed in percentages of the prices, were greatest when the level of prices was low and least

TABLE 16. COEFFICIENTS OF VARIABILITY OF DAILY CHANGES IN TOP AND AVERAGE PRICES OF HOGS AT CHICAGO, BY YEARS, 1921 TO 1928

Year	Top prices						Average prices					
	Satur- day to Mon- day	Mon- day to Tues- day	Tues- day to Wednes- day	Wednes- day to Thurs- day	Thurs- day to Fri- day	Fri- day to Satur- day	Satur- day to Mon- day	Mon- day to Tues- day	Tues- day to Wednes- day	Wednes- day to Thurs- day	Thurs- day to Fri- day	Fri- day to Satur- day
1921	1.79	1.78	1.74	2.00	1.39	1.24	2.33	1.98	1.93	1.86	1.89	1.53
1922	1.23	1.29	1.12	1.11	1.07	0.96	1.62	1.46	1.11	1.37	1.16	1.13
1923	1.71	1.42	1.52	1.39	1.47	1.17	1.78	1.30	1.36	1.32	1.43	1.03
1924	1.64	1.33	1.26	1.39	1.22	0.72	1.64	1.46	1.39	1.45	1.33	0.82
1925	1.33	1.20	1.15	1.32	1.29	0.87	1.48	1.13	1.21	1.38	1.28	0.85
1926	1.17	1.06	1.14	1.19	1.25	0.89	1.10	1.07	1.06	1.11	1.03	0.72
1927	1.39	1.11	1.08	1.03	0.94	0.82	1.28	1.00	0.85	0.97	0.88	0.47
1928	1.23	1.27	1.10	1.26	1.02	1.07	1.25	1.23	1.10	1.15	1.15	0.66
Average	1.43	1.29	1.24	1.33	1.20	0.96	1.54	1.32	1.22	1.31	1.24	0.87

when the level of prices was high. In other words, the absolute changes tended to remain fairly constant, regardless of differences in the general level of prices. The amount of the price change did not increase with increasing prices as would be expected.

EFFECT OF SEASON ON DAILY VARIABILITY

The time of year also had an important effect on price variability. Prices were much more variable in some seasons of the year than in others.

Both top and average prices were highly variable in July and August (table 17). From Friday to Saturday the average price changed 5.2 cents per hundredweight in May and June and 15.4 cents in August. From Saturday to Monday the average change was 20 cents in July and August. Top prices changed 17.5 cents from Tuesday to Wednesday in August and 8.8 cents in December.

TABLE 17. AVERAGE CHANGES IN TOP AND AVERAGE PRICES OF HOGS AT CHICAGO, BY FOUR-WEEK PERIODS, 1921 TO 1928

Period	Weeks	Top prices					Average prices						
		Satur- day to Mon- day	Mon- day to Tues- day	Tues- day to Wednes- day	Wednes- day to Thurs- day	Thurs- day to Fri- day	Fri- day to Satur- day	Satur- day to Mon- day	Mon- day to Tues- day	Tues- day to Wednes- day	Wednes- day to Thurs- day	Thurs- day to Fri- day	Fri- day to Satur- day
(Cents per hundredweight)													
1.....	1-4	14.1	16.1	10.9	13.6	15.0	11.6	13.4	13.6	10.2	13.4	14.4	9.1
2.....	5-8	13.8	12.8	13.6	14.7	14.5	10.9	13.4	11.5	12.5	10.4	12.0	8.1
3.....	9-12	15.2	15.3	16.1	12.8	14.8	9.5	12.7	16.7	11.5	11.6	12.9	7.2
4.....	13-16	14.8	12.5	11.0	14.7	10.9	6.7	14.8	12.0	9.1	12.8	11.2	5.9
5.....	17-20	14.5	8.9	11.9	14.1	10.3	9.4	12.0	8.9	9.5	13.6	8.6	5.6
6.....	21-24*	14.0	10.0	13.2	8.3	10.8	8.5	12.7	9.0	11.0	7.5	10.6	5.2
7.....	25-28*	12.9	12.5	9.8	10.8	11.0	12.1	16.0	12.5	10.6	10.4	11.2	11.0
8.....	29-32	19.8	13.4	16.9	17.5	12.6	12.3	20.5	14.1	19.5	18.0	15.0	12.3
9.....	33-36*	17.7	14.8	17.5	14.4	15.0	12.7	20.0	14.8	15.3	15.8	10.2	15.4
10.....	37-40	17.5	14.1	15.5	13.1	9.7	10.3	17.3	13.6	11.9	12.0	11.9	9.5
11.....	41-44	11.9	16.1	11.1	15.8	13.4	9.4	13.8	14.4	12.5	16.4	14.2	9.3
12.....	45-48*	12.5	15.4	9.6	12.9	12.1	6.9	15.6	12.9	8.5	11.9	12.3	6.2
13.....	49-52*	12.5	11.5	8.8	12.9	10.2	9.0	13.3	11.2	11.5	11.7	10.6	5.6
Average.....		14.9	13.4	12.9	13.7	12.5	10.0	15.0	12.8	11.9	12.7	12.1	8.5

* Only three weeks included, because of holidays.

In general, from the standpoint of absolute changes, prices fluctuated the most in the four months July to October inclusive, and least in the four months February to May inclusive. During the former period, however, the level of prices was somewhat higher than in the latter. Hence, somewhat larger fluctuations would be expected from July to October.

The coefficients of variability substantiate the fact that prices vary more from day to day during the summer than during the spring. The contention that absolute price changes tend to remain constant regardless of changes in the level of prices, also is supported.

In July and August, changes in the average price from Saturday to Monday amounted to more than 2 per cent of the price paid in those months (table 18). In May the coefficient was 1.22 per cent. For corresponding changes from Friday to Saturday, the figures were 1.56 and 0.57 per cent, respectively.

TABLE 18. COEFFICIENTS OF VARIABILITY OF DAILY CHANGES IN TOP AND AVERAGE PRICES OF HOGS AT CHICAGO, BY FOUR-WEEK PERIODS, 1921 TO 1928

Period	Weeks	Top prices						Average prices					
		Satur- day to Mon- day	Mon- day to Tues- day	Tues- day to Wednes- day	Wednes- day to Thurs- day	Thurs- day to Fri- day	Fri- day to Satur- day	Satur- day to Mon- day	Mon- day to Tues- day	Tues- day to Wednes- day	Wednes- day to Thurs- day	Thurs- day to Fri- day	Fri- day to Satur- day
1.....	1-4	1.44	1.64	1.11	1.39	1.53	1.17	1.43	1.47	1.09	1.48	1.53	0.96
2.....	5-8	1.36	1.26	1.34	1.44	1.41	1.06	1.39	1.39	1.37	1.07	1.24	0.83
3.....	9-12	1.42	1.42	1.50	1.19	1.37	0.86	1.26	1.65	1.14	1.14	1.37	0.71
4.....	13-16	1.40	1.19	1.11	1.40	1.04	0.64	1.49	0.31	0.93	1.29	1.13	0.60
5.....	17-20	1.41	0.87	1.16	1.38	1.00	0.92	1.23	0.91	1.00	1.39	0.89	0.57
6.....	21-24*	1.39	0.99	1.32	0.83	1.07	0.84	1.31	0.93	1.14	0.77	1.09	0.54
7.....	25-28*	1.23	1.19	0.93	1.02	1.04	1.14	1.62	1.26	1.07	1.04	1.12	1.11
8.....	29-32*	1.76	1.19	1.50	1.56	1.31	1.10	2.03	1.40	1.94	1.49	1.49	1.23
9.....	33-36*	1.57	1.32	1.57	1.28	1.32	1.13	2.01	1.50	1.60	1.59	1.00	1.56
10.....	37-40	1.54	1.25	1.39	1.18	0.87	0.93	1.70	1.34	1.18	1.28	1.17	0.94
11.....	41-44	1.12	1.54	1.07	1.53	1.30	0.91	1.41	1.49	1.30	1.71	1.48	1.03
12.....	45-48*	1.40	1.32	1.01	1.37	1.29	0.74	1.71	1.43	0.94	1.33	1.37	0.69
13.....	49-52*	1.36	1.35	0.96	1.40	1.10	0.98	1.51	1.28	1.31	1.33	1.30	0.68
Average.....		1.43	1.29	1.24	1.32	1.20	0.96	1.54	1.32	1.22	1.31	1.24	0.87

* Only three weeks included, because of holidays.

For the week as a whole, average prices underwent greater seasonal variation in day-to-day fluctuations than did top prices. This was the case despite the fact that average prices themselves showed less seasonal variation than did top prices.

From Tuesday to Wednesday, the coefficients of daily top-price variability ranged from 0.93 to 1.57 per cent, a difference of 0.64 per cent. For the same days the coefficients for average prices ranged from 0.92 to 1.94 per cent, a difference of 1.02 per cent.

HOW PRICES VARY

The bulk of the changes in hog prices from one day to the next are changes of 25 cents per hundred-weight or less (table 19 and figure 8). For the week as a whole, the distributions are approximately normal, with few large changes either up or down and with increasing frequency with small fluctuations.

The main difference between the frequency distributions of daily changes in top and in average prices is in the number of small changes (figure 8). There were many days when the top price did not change from the price on the preceding day. The number of days when the average price did not change was much less. On the other hand, average prices underwent more small changes—changes from 5 to 10 cents—than did top prices.

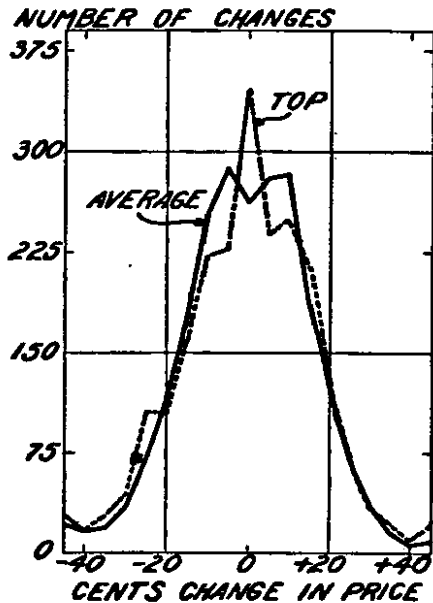


FIGURE 8. FREQUENCY DISTRIBUTION OF DAILY CHANGES IN TOP AND AVERAGE PRICES OF HOGS, CHICAGO, 1921 TO 1928

For the week as a whole, the daily top price undergoes fewer small changes than does the daily average price. However, there are more days on which no change in price takes place

TABLE 19. FREQUENCY DISTRIBUTION OF DAILY CHANGES IN TOP AND AVERAGE PRICES OF HOGS, WITHOUT REGARD TO DIRECTION, AT CHICAGO, 1921 TO 1928

Price change per hundredweight	Number of changes in top prices						Number of changes in average prices					
	Saturday to Monday	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Thursday to Friday	Friday to Saturday	Saturday to Monday	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Thursday to Friday	Friday to Saturday
(Cents)												
0.....	43	44	59	52	61	87	28	33	40	32	39	91
5.....	51	83	77	83	84	107	88	99	90	98	96	123
10.....	81	88	86	89	67	59	81	83	111	98	91	78
15.....	77	53	56	78	66	50	73	65	64	66	56	38
20.....	46	43	41	34	34	34	51	43	34	41	47	19
25.....	25	23	24	39	33	31	20	36	14	28	37	14
30.....	17	11	11	16	15	6	23	16	8	7	8	7
35.....	14	7	5	5	7	7	12	3	5	7	5	5
40.....	4	4	7	3	4	1	4	6	3	4	3	3
Over 40.....	8	16	10	9	5	4	7	4	7	5	3	3
Total.....	378	376	378	376	376	376	376	376	376	376	376	376

Disregarding the direction, the most frequent average-price change was 5 cents (table 19). A 10-cent change was most frequent for top prices. Well over half of the changes were 10 cents or less.

Different price changes were typical for different days of the week. In the case of average prices, the most frequent changes from Monday to Tuesday, Thursday to Friday, and Friday to Saturday, were 5-cent changes. From Saturday to Monday and from Tuesday to Wednesday 10-cent changes were most frequent, while from Wednesday to Thursday the number of 5- and of 10-cent changes was the same. For top prices, 10-cent changes were most frequent on all days except Thursday to Friday and Friday to Saturday.

TABLE 20. FREQUENCY DISTRIBUTION OF DAILY CHANGES IN TOP AND AVERAGE PRICES OF HOGS AT CHICAGO, 1921 TO 1928

Price change per hundredweight	Number of changes in top prices						Number of changes in average prices					
	Saturday to Monday	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Thursday to Friday	Friday to Saturday	Saturday to Monday	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Thursday to Friday	Friday to Saturday
(Cents)												
Less than 40.....	2	7	9	6	0	3	2	3	7	5	1	3
-40.....	2	2	7	2	1	1	2	5	3	3	2	2
-35.....	4	6	5	3	3	6	5	2	4	2	3	3
-30.....	6	10	9	9	3	6	10	10	3	1	2	6
-25.....	14	19	15	20	17	10	10	15	6	13	13	11
-20.....	12	24	22	16	14	18	22	22	12	15	24	14
-15.....	34	26	29	30	18	22	26	36	25	28	26	26
-10.....	42	41	45	34	25	24	39	40	58	34	36	45
-5.....	25	42	32	27	29	68	38	53	46	55	36	60
0.....	43	44	59	52	61	87	28	32	40	32	39	91
+5.....	26	41	45	25	55	44	20	46	44	28	39	62
+10.....	39	47	41	55	42	25	42	42	53	59	53	33
+15.....	43	37	27	43	45	28	44	29	29	38	38	12
+20.....	24	19	19	18	20	16	29	20	22	23	23	5
+25.....	31	14	9	9	16	2	20	3	3	15	14	3
+30.....	11	1	3	7	12	0	12	6	5	6	6	1
+35.....	10	1	0	5	4	1	7	1	1	5	2	0
+40.....	2	2	0	1	3	0	2	0	0	2	2	0
Over 40.....	6	3	1	3	5	2	5	1	6	0	2	0
Total.....	378	376	378	376	376	376	376	376	376	376	376	376

The number of large price changes, 35 cents or more, was greater for top prices than for average prices every day of the week. Moreover, in both cases, the number of large changes tended to be greater at the beginning of the week and to decrease as the week passed.

Frequency distributions of daily price changes, taken with regard to the direction of the change, are somewhat variable in shape for different days of the week (table 20). The most frequent change in the average price from Saturday to Monday was a 15-cent advance; from Monday to Tuesday it was a 5-cent decline; from Tuesday to Wednesday, a 10-cent decline; from Wednesday to Thursday, a 10-cent advance; from Thursday to Friday, a 5-cent advance; and from Friday to Saturday the greatest frequency was with no price change.

With top prices, no changes were most frequent on four of the six days. From Monday to Tuesday and from Wednesday to Thursday, 10-cent advances were the commonest changes. Relatively few large price advances were made from Tuesday to Wednesday and from Friday to Saturday. Large price advances from Saturday to Monday were the

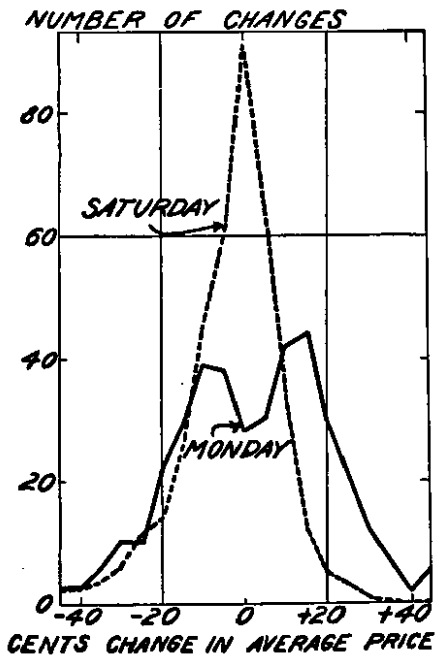


FIGURE 9. FREQUENCY DISTRIBUTION OF DAILY CHANGES IN THE AVERAGE PRICE OF HOGS FROM FRIDAY TO SATURDAY AND FROM SATURDAY TO MONDAY, CHICAGO, 1921 TO 1928

More than half of the changes in the average price of hogs from Friday to Saturday were changes of 5 cents or less. Three-fourths of the changes from Saturday to Monday were changes of 10 cents or more

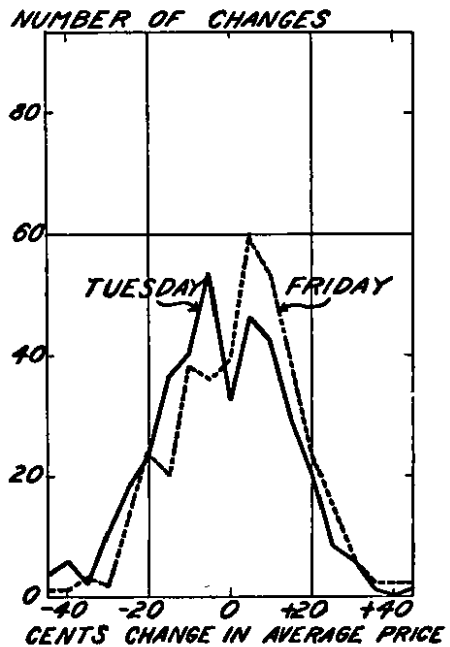


FIGURE 10. FREQUENCY DISTRIBUTION OF DAILY CHANGES IN THE AVERAGE PRICE OF HOGS FROM MONDAY TO TUESDAY AND FROM THURSDAY TO FRIDAY, CHICAGO, 1921 TO 1928

The most typical price change from Monday to Tuesday was a decline of 5 cents, whereas from Thursday to Friday the most typical change was an advance of 5 cents

most frequent. The greatest number of large price declines were made from Tuesday to Wednesday, and the smallest number from Thursday to Friday.

The frequency distributions of daily changes in the average price from Friday to Saturday and from Saturday to Monday show a marked contrast (table 20 and figure 9). There were more than three times as many instances when the average price did not change from Friday to Saturday as there were from Saturday to Monday. Moreover, 5-cent changes, both advances and declines, were more frequent from Friday to Saturday. The number of price declines of 10 cents or more was not materially different for the two days, but from Saturday to Monday there were many more advances in price of 10 cents or more.

The distribution of average-price changes from Friday to Saturday was distinctly unimodal, with no changes predominating. From Saturday to Monday, 5- and 10-cent declines and 10- and 15-cent advances were the most frequent changes. Although 15-cent advances predominated to some extent, no distinct modal change stood out, owing to the flatness and irregularity of the central part of the distribution.

Whereas 5-cent advances in the average price from Thursday to Friday were the most typical changes, 5-cent declines were the most frequent from Monday to Tuesday (table 20 and figure 10). Moreover, average prices showed fewer price advances of any amount from Monday to Tuesday than from Thursday to Friday. Likewise, there were more price declines from Monday to Tuesday than from Thursday to Friday.

Several statistical measures for the frequency distributions presented in table 20 were calculated and are presented in table 21. The results are intended principally to show differences between days of the week rather than absolute values.

The arithmetic mean and the median are measures of the average net advance or decline of the price from one day to the next during the entire eight-year period. For example, the top price of hogs on Monday aver-

TABLE 21. MEAN, MEDIAN, MEAN DEVIATION, SKEWNESS, AND CORRELATION OF DAILY CHANGES IN THE TOP AND AVERAGE PRICES OF HOGS AT CHICAGO, 1921 TO 1928

	Saturday to Monday	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Thursday to Friday	Friday to Saturday
Arithmetic mean:						
Top-price changes.....	+3.47	-2.17	-3.60	-0.45	+3.95	-2.66
Average-price changes.....	+2.51	-2.39	-1.25	+1.21	+1.88	-3.11
Median:						
Top-price changes.....	+3.37	-1.19	-1.19	+0.53	+4.09	-1.49
Average-price changes.....	+3.08	-2.74	-0.69	+2.27	+3.47	-1.43
Mean deviation:						
Top-price changes.....	14.9	13.4	12.9	13.7	12.5	10.0
Average-price changes.....	15.0	12.8	11.9	12.7	12.1	8.5
Coefficient of skewness*:						
Top-price changes.....	+0.02	-0.22	-0.56	-0.21	-0.03	-0.35
Average-price changes.....	-0.11	+0.08	-0.14	-0.25	-0.39	-0.59
Coefficient of correlation between top-price changes and average- price changes.....	+0.87	+0.82	+0.73	+0.79	+0.74	+0.32

*Calculated from the formula

$$\text{Skewness} = \frac{3(\text{mean} - \text{median})}{\text{Mean deviation}}$$

aged more than 3 cents per hundredweight above Saturday's top price. The average price on Tuesday was between 2 and 3 cents below this price on Monday. Tuesday's, Wednesday's, and Saturday's prices were typically lower than the prices paid on the preceding day.

Differences between the arithmetic mean and the median value for corresponding days and prices are indications of the lack of symmetry in the frequency distributions. They form the basis for calculating coefficients of skewness, a measure of this lack of symmetry.

In general, the coefficients of skewness were negative and very small. This means that the distributions deviated very little from normal, and that the large price declines outnumbered the large price advances in most cases.

The distributions which deviated the most from normal were those of top-price changes from Tuesday to Wednesday and of average-price changes from Friday to Saturday. The distributions of top-price changes from Saturday to Monday and from Thursday to Friday were practically normal.

SYNCHRONOUS VARIABILITY OF TOP AND AVERAGE PRICES

If the same spread existed between top and average prices at all times, their changes from day to day would, of course, be exactly the same. However, such is not the case. During the eight-year period, top and average prices fluctuated together from day to day approximately 27 per cent of the time (table 22). A 5-cent difference in their changes added

TABLE 22. FREQUENCY DISTRIBUTION OF DIFFERENCES IN THE DAILY CHANGES IN TOP AND AVERAGE PRICES OF HOGS AT CHICAGO, 1921 TO 1928

Price change per hundredweight (Cents)	Saturday to Monday	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Thursday to Friday	Friday to Saturday
0.....	107	123	94	110	97	95
5.....	151	147	162	141	144	137
10.....	70	63	69	76	81	74
15.....	27	17	26	26	22	28
20.....	12	11	12	9	20	20
25.....	4	7	5	7	3	10
30.....	2	6	3	1	2	5
35.....	2	0	1	3	4	3
40.....	0	1	0	1	1	2
Over 40.....	1	1	4	2	2	2

another 39 per cent, leaving approximately one-third of the days when changes in the average price from the preceding day differed from changes in the top price by 10 cents or more.

Coefficients of correlation also were calculated as measures of the synchronous variability of top and average prices from day to day (table 21). The two prices fluctuated most nearly together from Saturday to Monday. The relationship was much less from Friday to Saturday.

VARIABILITY OF DAILY HOG RECEIPTS

The number of hogs received daily at Chicago is highly variable. The principal factors affecting the number are the hog cycle, the seasonal variation, and the unequal distribution of weekly receipts.

Monday's receipts varied, during the period, from about 21,000 to about 123,000 hogs (table 23). The highest number officially recorded at the stockyards on any day was 122,749, received on Monday, December 15, 1924.

TABLE 23. FREQUENCY DISTRIBUTION OF DAILY RECEIPTS OF HOGS AT CHICAGO, 1921 TO 1928

Receipts (hundreds)	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
10- 49.9						175
50- 89.9				1	1	147
90- 129.9		2	34	2	17	39
130- 169.9		21	88	14	59	16
170- 209.9		51	111	25	70	1
210- 249.9	8	75	62	57	61	
250- 289.9	16	71	38	58	46	
290- 329.9	26	48	21	61	34	
330- 369.9	45	22	8	41	25	
370- 409.9	35	23		34	16	
410- 449.9	39	17	2	16	12	
450- 489.9	46	8	2	23	10	
490- 529.9	32	9	2	12	9	
530- 569.9	35	9		12	7	
570- 609.9	20	6		2	2	
610- 649.9	17	5		7	4	
650- 689.9	18	6		1	1	
690- 729.9	9	1		5	1	
730- 769.9	8	1		1	1	
770- 809.9	7	1		1		
810- 849.9	3			1		
850- 889.9	4			1		
890- 929.9	3					
930- 969.9	2					
970-1,009.9	0					
1,010-1,049.9	2					
1,050-1,089.9	0					
1,090-1,129.9	0					
1,130-1,169.9	0					
1,170-1,209.9	0					
1,210-1,249.9	1					
Total.....	376	376	376	376	376	376

The largest number of hogs received on Saturday did not exceed 21,000, the lowest number that arrived on Monday. Tuesday's receipts varied between 9,000 and 81,000 hogs; Wednesday's, between 9,000 and 53,000; Thursday's, between 5,000 and 89,000; and Friday's, between 5,000 and 77,000.

Receipts of approximately 47,000 hogs were most frequent on Monday. The commonest number received on Tuesday was 23,000, less than half the number on Monday. Typical receipts on Wednesday were 19,000, on Thursday 31,000, on Friday 19,000, and on Saturday 3,000.

Various measures of central tendency, dispersion, and skewness were calculated for the frequency distributions in table 23. The results are presented in table 24. As with the frequency distributions of price changes, the results are intended to show differences between days of the week rather than absolute values.

On all days of the week the arithmetic mean was larger than the median, indicating positive skewness in the distributions. This means that there were more days of very heavy receipts than of very light receipts.

The distributions were more skewed for some days of the week than for others. For Monday, the distribution was more nearly normal than for the other five days. The distribution for Tuesday was skewed the most.

TABLE 24. MEAN, MEDIAN, STANDARD DEVIATION, SKEWNESS, AND COEFFICIENT OF VARIABILITY OF DAILY RECEIPTS OF HOGS AT CHICAGO, 1921 TO 1928

	Arith- metic mean	Median	Standard deviation	Coefficient of skewness*	Coefficient of variability
Monday.....	48,920	46,700	15,830	+0.42	32.4
Tuesday.....	30,480	27,230	12,400	+0.79	40.3
Wednesday.....	20,690	19,400	7,080	+0.55	34.2
Thursday.....	33,530	31,000	12,800	+0.59	38.2
Friday.....	26,650	23,720	11,960	+0.73	40.0
Saturday.....	5,980	5,280	3,040	+0.69	50.8

*Calculated from the formula

$$\text{Skewness} = \frac{3(\text{mean} - \text{median})}{\text{Standard deviation}}$$

The coefficients of variability, which were computed by expressing the standard deviations as percentages of the arithmetic means, averaged approximately 39 per cent for the week. Saturday's receipts were the most variable, while receipts on Monday showed the least variation.

RELATION OF DAILY PRICES TO DAILY RECEIPTS

DAILY VARIATIONS

There are important differences in the effect that fluctuations in the receipts of hogs have upon prices on different days of the week. In measuring these relationships, the average number of hogs received on each day of the week and the average price paid during the entire eight-year period were assumed as normals. Logarithmic curves were then used to relate percentage deviations in receipts from normal, to percentage deviations in the price from normal.

Owing to the large number of observations which were used in constructing these curves, the data were grouped on the basis of the amount of receipts. The group averages, both receipts and price, were then used as observations for constructing the curves of relationship. They were weighted according to the number of cases in each group.

Receipts below normal were associated with prices above normal, and receipts above normal were associated with prices below normal, on all days of the week. The amount, however, that prices were below or above normal when receipts fluctuated from normal, differed for the different days of the week (table 25 and figures 11 to 17).

TABLE 25. RELATION OF DAILY RECEIPTS OF HOGS TO AVERAGE PRICES, CHICAGO, 1921 TO 1928

	Per cent change in price with a 1-per-cent change in receipts	Receipts 50 per cent below normal	Receipts 50 per cent above normal
		Per cent that price was above normal	Per cent that price was below normal
Monday.....	0.276	22	11
Tuesday.....	0.246	19	10
Wednesday.....	0.355	27	13
Thursday.....	0.227	16	9
Friday.....	0.233	17	9
Saturday.....	0.172	12	7

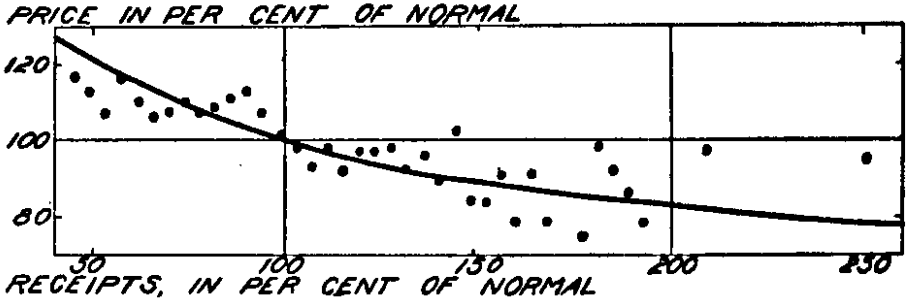


FIGURE 11. RELATION OF THE RECEIPTS OF HOGS ON MONDAY TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

When receipts on Monday were 50 per cent below normal, the price was 28 per cent above normal

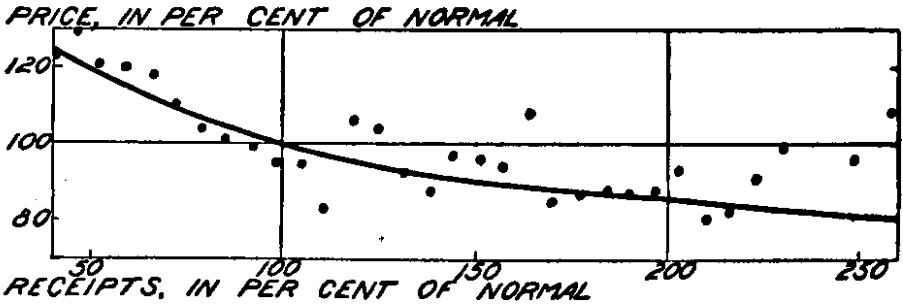


FIGURE 12. RELATION OF THE RECEIPTS OF HOGS ON TUESDAY TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

When receipts on Tuesday were 50 per cent below normal, the price was 19 per cent above normal

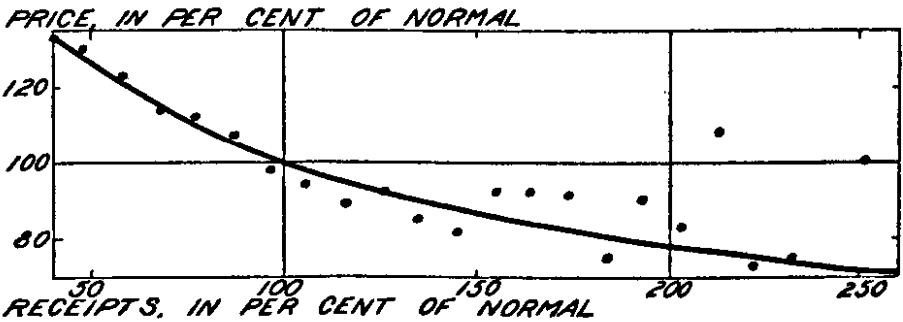


FIGURE 13. RELATION OF THE RECEIPTS OF HOGS ON WEDNESDAY TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

When receipts on Wednesday were 50 per cent below normal, the price was 27 per cent above normal

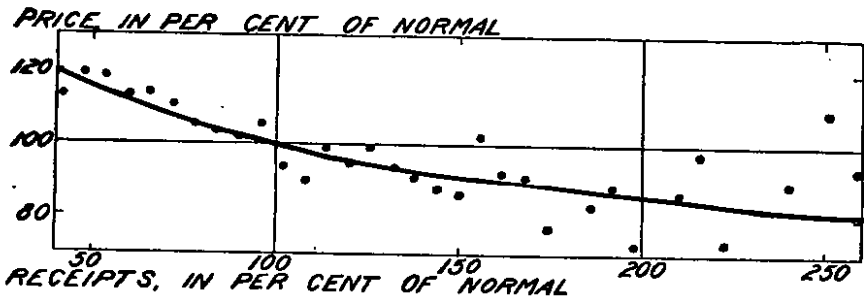


FIGURE 14. RELATION OF THE RECEIPTS OF HOGS ON THURSDAY TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

When receipts on Thursday were 50 per cent below normal, the price was 16 per cent above normal

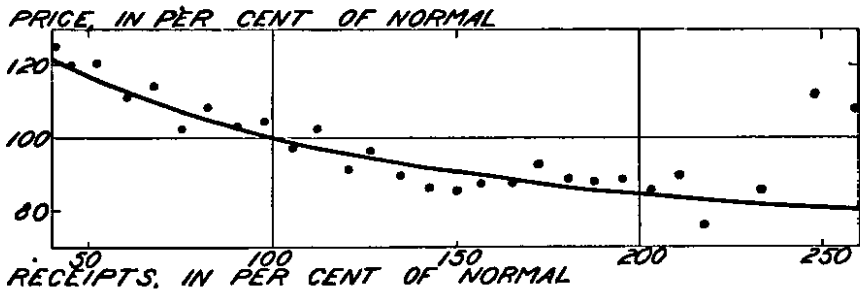


FIGURE 15. RELATION OF THE RECEIPTS OF HOGS ON FRIDAY TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

When receipts on Friday were 50 per cent below normal, the price was 17 per cent above normal

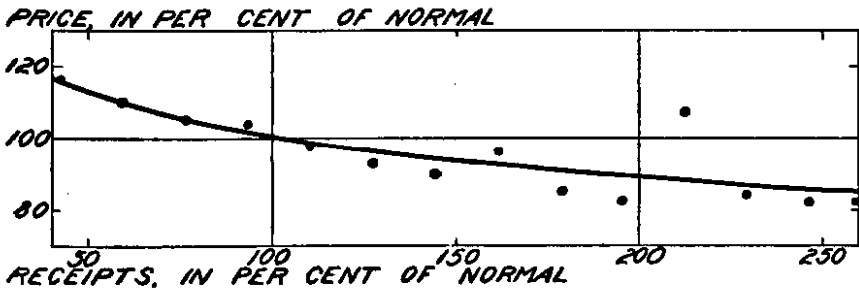


FIGURE 16. RELATION OF THE RECEIPTS OF HOGS ON SATURDAY TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

When receipts on Saturday were 50 per cent below normal, the price was 12 per cent above normal

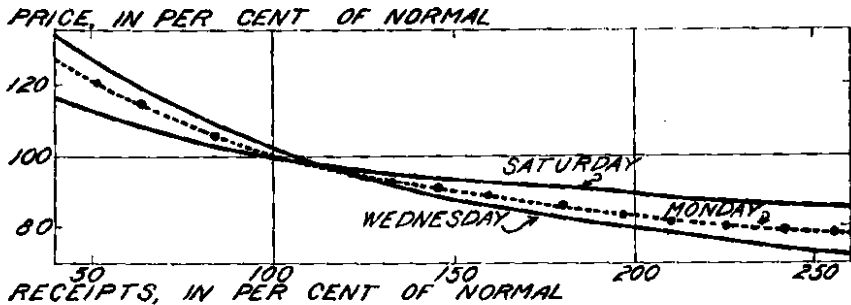


FIGURE 17. RELATION OF THE RECEIPTS OF HOGS ON MONDAY, WEDNESDAY, AND SATURDAY, TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

When receipts on Saturday were 50 per cent below normal, the price was 12 per cent above normal. On Monday and on Wednesday the price was 22 per cent and 27 per cent above normal, respectively, when receipts were 50 per cent below normal

The adjustment of prices to receipts was greatest on Wednesday and least on Saturday. Receipts 50 per cent below normal were associated with a price 27 per cent above normal on Wednesday and a price 12 per cent above normal on Saturday.

In general, the degree of price adjustment to receipts on different days was associated with the daily variability of receipts. The more variable a day's receipts, the less was the adjustment of prices to fluctuations in the receipts. Saturday's receipts were the most variable (table 24), and Monday's and Wednesday's receipts were the least variable. The price adjustment was least on Saturday and greatest on Monday and Wednesday.

DAILY, WEEKLY, AND YEARLY RELATIONSHIPS

The adjustment of prices to receipts for the week as a whole was greater than for any single day (figure 18). When weekly receipts were 50 per cent below normal, the price was 31 per cent above normal.

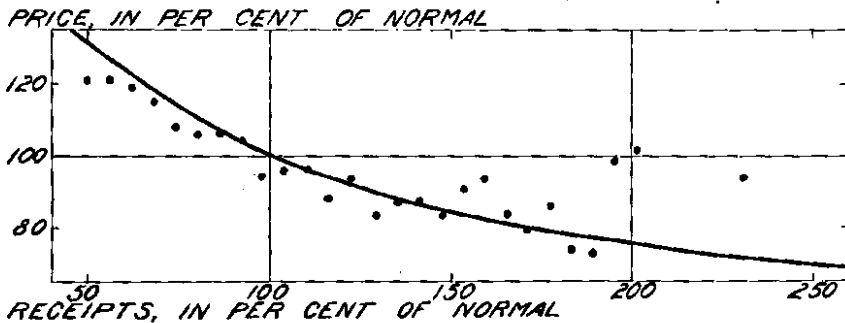


FIGURE 18. RELATION OF THE WEEKLY RECEIPTS OF HOGS TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

When receipts for a week were 50 per cent below normal, the price was 31 per cent above normal

As in measuring the relationship of daily receipts to prices, the averages for the entire period were assumed as normal. Also, group averages, weighted according to the number of cases in each group, were used in constructing the logarithmic curve of relationship between weekly receipts and prices.

When the period of time was extended to a year, the adjustment of prices to receipts was complete. That is to say, the total value (price times number of hogs received, disregarding changes in the average weight) remained constant for annual data. When a year's total receipts were 20 per cent below normal, the price was 25 per cent above normal (table 26 and figure 19). When the receipts were 20 per cent above normal, the price was 17 per cent below normal.

Although for the entire period yearly prices were completely adjusted to receipts, individual years deviated from the average relationship. When prices were advancing in the hog cycle, they advanced faster than receipts declined. Going down the cycle, prices declined faster than receipts increased. In consequence, relative to the average relationship, prices were over-adjusted in the first case and under-adjusted in the second. Or, in other words, prices led the way in both phases of the hog cycle.

A comparison of the relation of prices to daily, weekly, and yearly receipts shows the effect of the

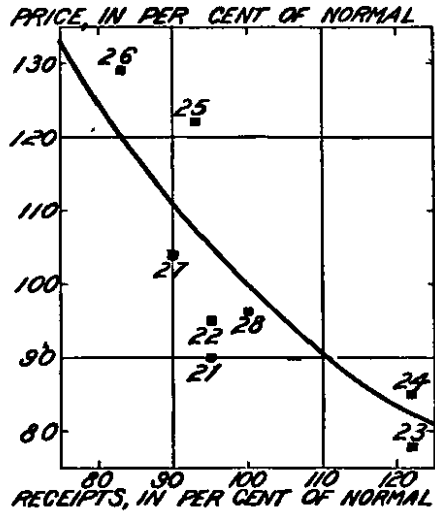


FIGURE 19. RELATION OF THE YEARLY RECEIPTS OF HOGS TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

On the average, the price of hogs was completely adjusted to variations in yearly receipts. However, individual years were not fully adjusted. Going up the hog-price cycle, prices advanced faster than receipts fell off; on the way down, prices declined faster than receipts increased

TABLE 26. RELATION OF DAILY, WEEKLY, AND YEARLY RECEIPTS OF HOGS TO AVERAGE PRICES, CHICAGO, 1921 TO 1928

	Per cent change in price with a 1-per-cent change in receipts	Receipts 20 per cent below normal	Receipts 20 per cent above normal
		Per cent that price was above normal	Per cent that price was below normal
Saturday.....	0.172	4	3
Wednesday.....	0.355	8	6
Week.....	0.406	9	7
Year.....	1.000	25	17

length of time on the adjustment of prices to receipts (table 26, and figures 20 and 21). The longer the period of time elapsing, the greater was the adjustment. When receipts were 20 per cent below normal, on Saturday

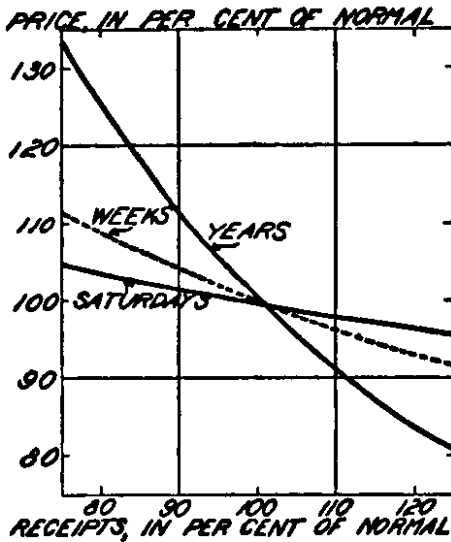


FIGURE 20. RELATION OF THE SATURDAY, WEEKLY, AND YEARLY RECEIPTS OF HOGS TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

When receipts of hogs at Chicago for Saturday, for a week, or for a year were 20 per cent below normal, the prices were 4, 9, and 25 per cent above normal, respectively

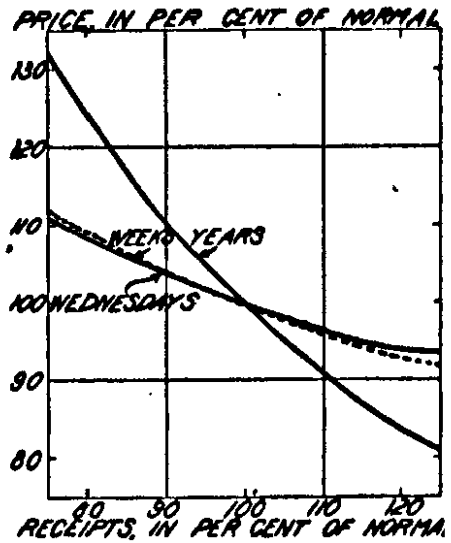


FIGURE 21. RELATION OF THE WEDNESDAY, WEEKLY, AND YEARLY RECEIPTS OF HOGS TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

When receipts of hogs at Chicago for Wednesday, for a week, or for a year were 20 per cent below normal, the prices were 8, 9, and 25 per cent above normal, respectively

the price was 4 per cent above normal, on Wednesday it was 8 per cent above normal, for the week it was 9 per cent above normal, and for the year it was 25 per cent above normal.

BEFORE AND AFTER THE WAR

The relation of daily receipts to prices during different periods of time was measured for Thursday. Average receipts and average prices during each of the periods were the assumed normals for that period. A comparison of the relationship of Thursday's receipts to Thursday's price before and after the World War is shown in table 27 and in figures 22, 23, and 24. Since the 1910-1913 and 1921-1924 periods were com-

TABLE 27. CHANGES IN THE RELATION OF THURSDAY'S RECEIPTS OF HOGS TO THE AVERAGE PRICE, CHICAGO

	Per cent change in price with a 1-per-cent change in receipts	Receipts 50 per cent below normal	Receipts 50 per cent above normal
		Per cent that price was above normal	Per cent that price was below normal
1910-1913.....	0.202	15	8
1921-1924.....	0.151	11	6
1925-1928.....	0.205	15	8
Winter, 1921-1928.....	0.223	16	9
Summer, 1921-1928.....	0.357	28	13

parable in so far as the phases of the hog cycle are concerned, they were used for comparing pre-war and post-war relationships.

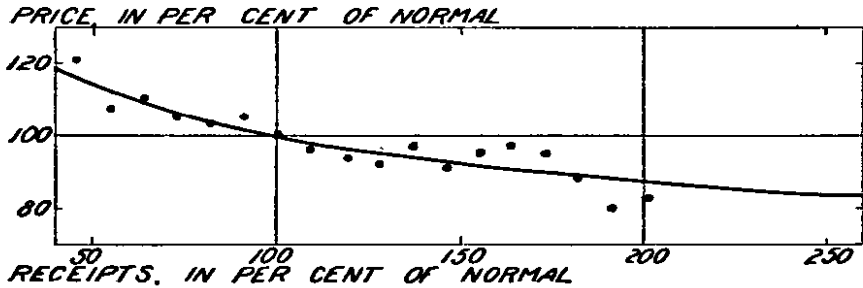


FIGURE 22. RELATION OF THE RECEIPTS OF HOGS ON THURSDAY TO THE AVERAGE PRICE, CHICAGO, 1910 TO 1913

Before the war, when receipts on Thursday were 50 per cent below normal the price was 15 per cent above normal

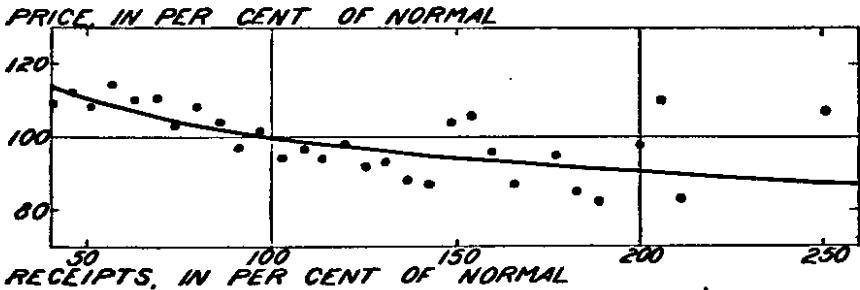


FIGURE 23. RELATION OF THE RECEIPTS OF HOGS ON THURSDAY AT THE BOTTOM OF THE HOG-PRICE CYCLE, TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1924

After the war and at the bottom of the hog-price cycle, when receipts on Thursday were 50 per cent below normal the price was 11 per cent above normal

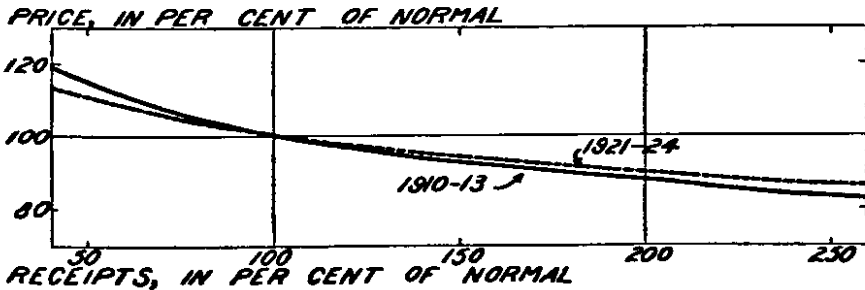


FIGURE 24. RELATION OF THE RECEIPTS OF HOGS ON THURSDAY BEFORE AND AFTER THE WAR, TO THE AVERAGE PRICE, CHICAGO, 1910 TO 1913 AND 1921 TO 1924

Prices fluctuated more with Thursday's receipts before the war than after the war

Before the war, receipts on Thursday 50 per cent below normal were associated with a price 15 per cent above normal. After the war, when receipts were 50 per cent below normal the price was 11 per cent above normal.

AT THE BOTTOM AND THE TOP OF THE CYCLE

During the 1921-1924 period the prices of hogs were low, whereas during the 1925-1928 period they were high. In the earlier period hogs were at the bottom of the hog-price cycle, and in the later period they were at the top.

The relation of receipts on Thursday to the price during each of these two periods is shown in table 27 and in figures 23, 25, and 26. When receipts on Thursday at the bottom of the cycle were 50 per cent below normal

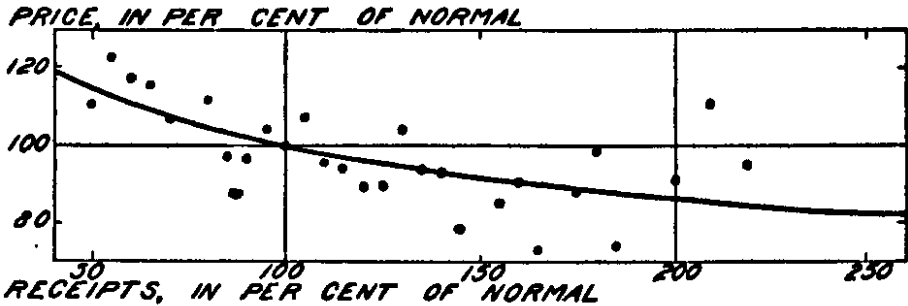


FIGURE 25. RELATION OF THE RECEIPTS OF HOGS ON THURSDAY AT THE TOP OF THE HOG-PRICE CYCLE, TO THE AVERAGE PRICE, CHICAGO, 1925 TO 1928

After the war and at the top of the hog-price cycle, when receipts on Thursday were 50 per cent below normal the price was 15 per cent above normal

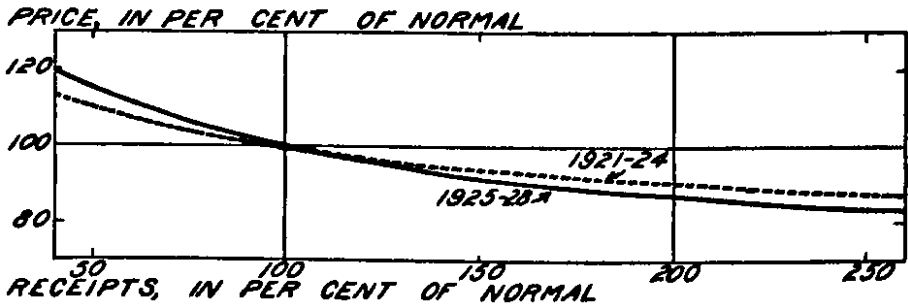


FIGURE 26. RELATION OF THE RECEIPTS OF HOGS ON THURSDAY AT THE TOP AND AT THE BOTTOM OF THE HOG-PRICE CYCLE, TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1924 AND 1925 TO 1928

Prices fluctuated more with Thursday's receipts at the top of the hog-price cycle than at the bottom

normal, the price was 11 per cent above normal. When receipts on Thursday at the top of the cycle were 50 per cent below normal, the price was 15 per cent above normal. Apparently the adjustment of daily prices to receipts is greater when prices are high and receipts are light than when prices are low and receipts are heavy.

DURING THE WINTER AND THE SUMMER MONTHS

The relation of receipts on Thursday to the price of hogs differed during the winter and the summer months (table 27, and figures 27, 28, and 29). During the winter, receipts on Thursday 50 per cent below normal

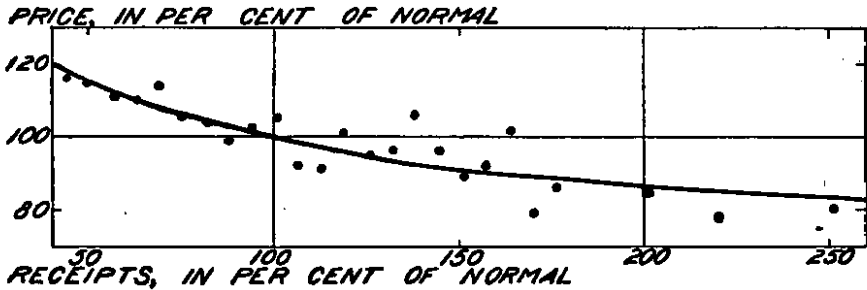


FIGURE 27. RELATION OF THE RECEIPTS OF HOGS ON THURSDAY DURING THE WINTER MONTHS, TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

During the winter, when receipts on Thursday were 50 per cent below normal the price was 16 per cent above normal

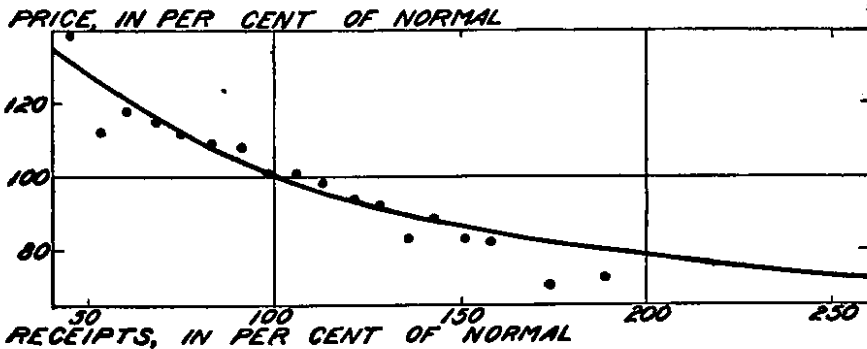


FIGURE 28. RELATION OF THE RECEIPTS OF HOGS ON THURSDAY DURING THE SUMMER MONTHS, TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

During the summer, when receipts on Thursday were 50 per cent below normal the price was 28 per cent above normal

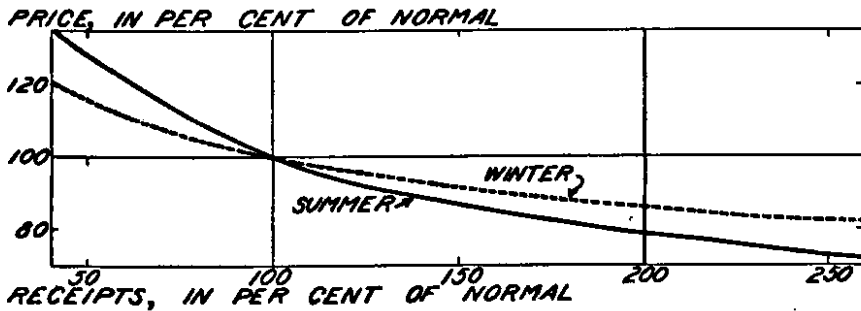


FIGURE 29. RELATION OF THE RECEIPTS OF HOGS ON THURSDAY DURING THE WINTER AND THE SUMMER MONTHS, TO THE AVERAGE PRICE, CHICAGO, 1921 TO 1928

Prices fluctuated more with Thursday's receipts during the summer than during the winter

were associated with a price 16 per cent above normal. During the summer, when Thursday's receipts were 50 per cent below normal the price was 28 per cent above normal. The adjustment of prices to receipts was much greater in the summer than in the winter.

Since prices are high and receipts are light in the summer as compared with the winter, support is given to the contention that the adjustment of daily prices to receipts is greater when prices are high and receipts are light than when prices are low and receipts are heavy.

RELATION OF DAILY RECEIPTS TO DAILY PRICE CHANGES

When the price of hogs advances from one day to the next, the number of hogs received at Chicago on the second day is generally small. When the price declines the number is generally large.

During the eight-year period from 1921 to 1928 inclusive, the number of hogs received at Chicago on Monday when the average price declined 40 cents per hundredweight from Saturday to Monday, averaged 67,200 (table 28). When the price advanced 40 cents the average number of hogs received on Monday was 39,200, or about 58 per cent of the number received when the price declined by the same amount.

TABLE 28. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO RECEIPTS OF HOGS ON MONDAY, CHICAGO, 1921 TO 1928

Change in average price from Saturday to Monday (Cents)	Frequency	Receipts of hogs on Monday		
		Total (hundreds)	Average (hundreds)	Per cent of normal
-40.....	2	1,343	672	137
-35.....	5	2,891	578	118
-30.....	9	5,287	587	120
-25.....	10	5,875	588	120
-20.....	22	14,060	639	131
-15.....	28	15,904	568	116
-10.....	36	20,604	572	117
- 5.....	38	19,521	514	105
0.....	27	13,761	510	104
+ 5.....	30	14,248	475	97
+10.....	40	18,677	467	95
+15.....	42	17,906	426	87
+20.....	27	10,894	403	82
+25.....	20	6,773	339	69
+30.....	11	4,202	382	78
+35.....	6	2,514	419	86
+40.....	2	784	392	80

The average number of hogs received on Monday during the entire period was 49,000 (table 5, page 12). This figure was taken as normal for Monday receipts.

As would be expected, Monday's receipts were approximately normal when the price of hogs did not change from Saturday to Monday (table 28). When the price declined 40 cents the receipts were 37 per cent above normal, and when it advanced 40 cents they were 20 per cent below normal. In general, the variance of receipts from normal was proportionate to the size and direction of the price change.

A logarithmic curve was fitted to these percentage deviations from normal (figure 30). In calculating the equation for this curve, the group

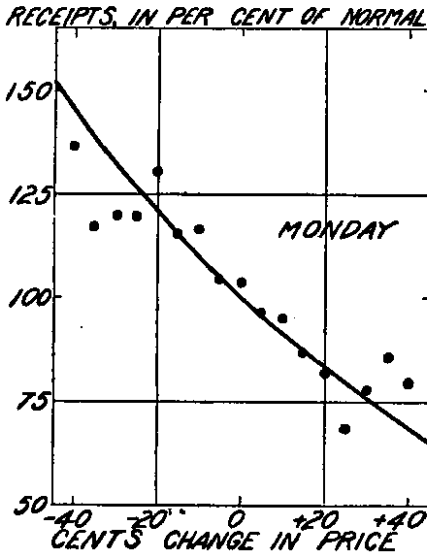


FIGURE 30. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO RECEIPTS ON MONDAY, CHICAGO, 1921 TO 1928

When the price declined 40 cents from Saturday to Monday, receipts on Monday were 47 per cent above normal

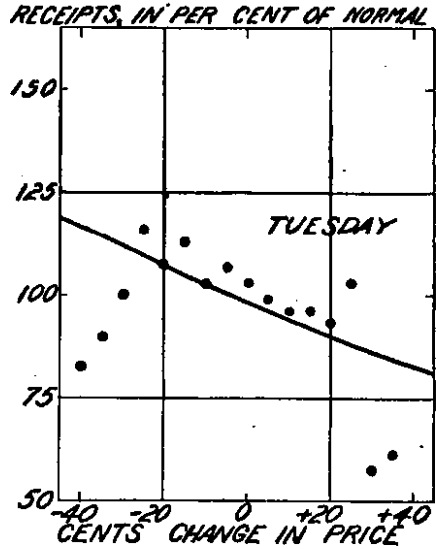


FIGURE 31. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM MONDAY TO TUESDAY, TO RECEIPTS ON TUESDAY, CHICAGO, 1921 TO 1928

When the price declined 40 cents from Monday to Tuesday, receipts on Tuesday were 18 per cent above normal

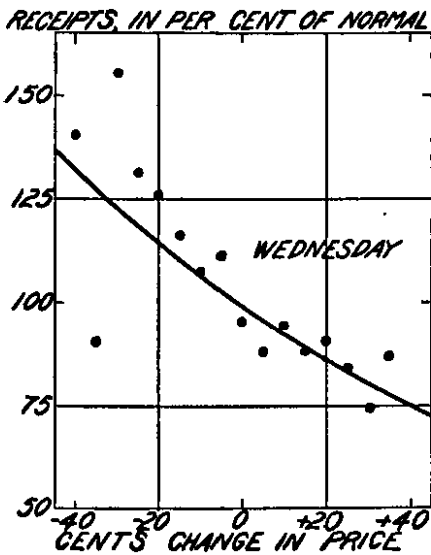


FIGURE 32. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM TUESDAY TO WEDNESDAY, TO RECEIPTS ON WEDNESDAY, CHICAGO, 1921 TO 1928

When the price declined 40 cents from Tuesday to Wednesday, receipts on Wednesday were 33 per cent above normal

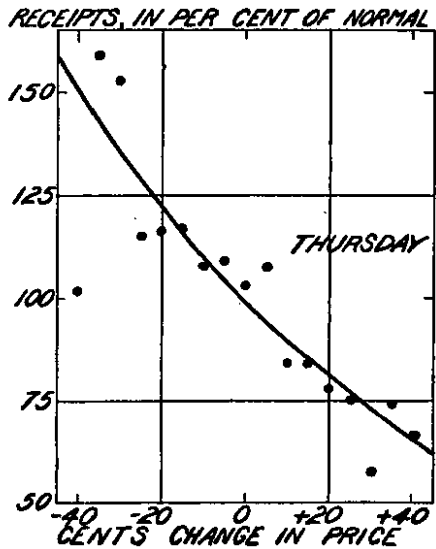


FIGURE 33. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM WEDNESDAY TO THURSDAY, TO RECEIPTS ON THURSDAY, CHICAGO, 1921 TO 1928

When the price declined 40 cents from Wednesday to Thursday, receipts on Thursday were 51 per cent above normal

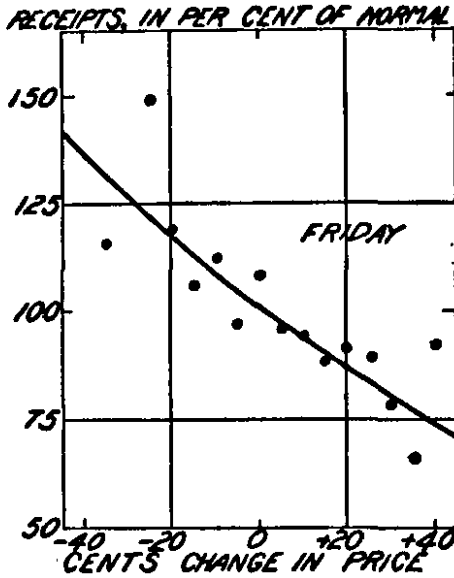


FIGURE 34. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM THURSDAY TO FRIDAY, TO RECEIPTS ON FRIDAY, CHICAGO, 1921 TO 1928

When the price declined 40 cents from Thursday to Friday, receipts on Friday were 38 per cent above normal. When the price advanced 40 cents, receipts were 25 per cent below normal

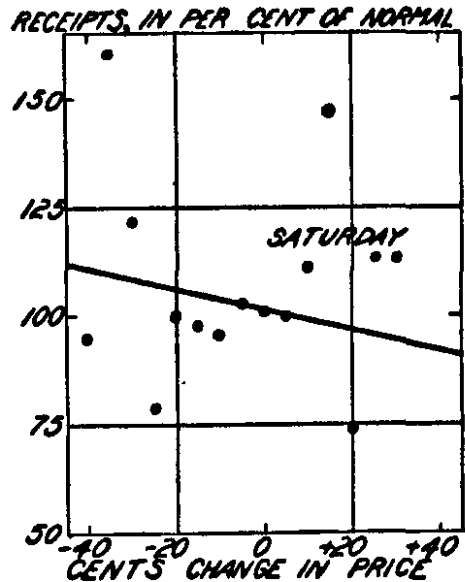


FIGURE 35. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM FRIDAY TO SATURDAY, TO RECEIPTS ON SATURDAY, CHICAGO, 1921 TO 1928

When the price declined 40 cents from Friday to Saturday, receipts on Saturday were 11 per cent above normal. When the price advanced 40 cents, receipts were 8 per cent below normal

averages given in table 28 were weighted according to the frequency of the group. For example, 137 per cent was given a weight of 2, 118 per cent a weight of 5, and so on.

On the basis of the fitted curve, Monday's receipts of hogs were 47 per cent above normal when the price declined 40 cents from Saturday to Monday. They were 30 per cent below normal when the price advanced 40 cents. When there was no change in the price, receipts on Monday averaged 1 per cent above normal.

Similar curves were fitted to the data for the other days of the week (figures 31 to 35). On Tuesday, receipts were only 18 per cent above normal when the price declined 40 cents from Monday to Tuesday. Moreover, receipts were 2 per cent below normal when the price did not change.

There was considerable difference in the relation of price changes from one day to the next, to the variations in the number of hogs received on different days of the week (table 29). When the price declined 40 cents from Wednesday to Thursday, Thursday's receipts were 51 per cent above normal. When the same change in price took place from Friday to Saturday, Saturday's receipts were only 11 per cent above normal.

Monday's and Thursday's receipts of hogs deviated the most from normal with a given price change from the preceding day (figures 36 and 37). Saturday's receipts deviated the least. Not only is the slope of

TABLE 29. RELATION OF DAILY CHANGES IN THE AVERAGE PRICE OF HOGS TO THE VARIATION OF DAILY RECEIPTS FROM NORMAL, CHICAGO, 1921 TO 1928

	Change in price from preceding day				
	-40 cents	-20 cents	0	+20 cents	+40 cents
	Receipts in per cent of normal				
Monday.....	147	122	101	84	70
Tuesday.....	118	108	98	90	82
Wednesday.....	133	115	100	87	75
Thursday.....	151	122	99	80	65
Friday.....	138	118	101	87	75
Saturday.....	111	106	101	96	92

RECEIPTS, IN PER CENT OF NORMAL

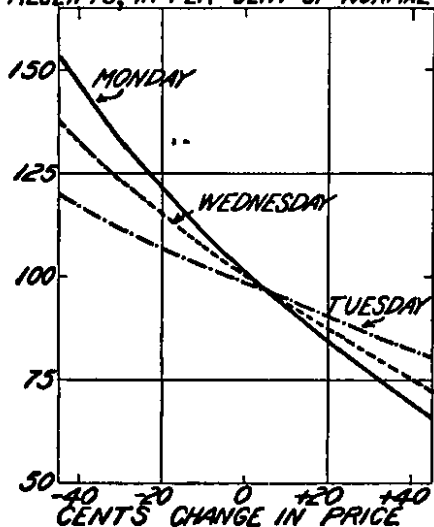


FIGURE 36. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM THE PRECEDING DAY, TO RECEIPTS ON MONDAY, TUESDAY, AND WEDNESDAY, CHICAGO, 1921 TO 1928

When the price declined 40 cents from that on the preceding day, receipts on Monday, Tuesday, and Wednesday were, respectively, 147, 118, and 133 per cent of normal

RECEIPTS, IN PER CENT OF NORMAL

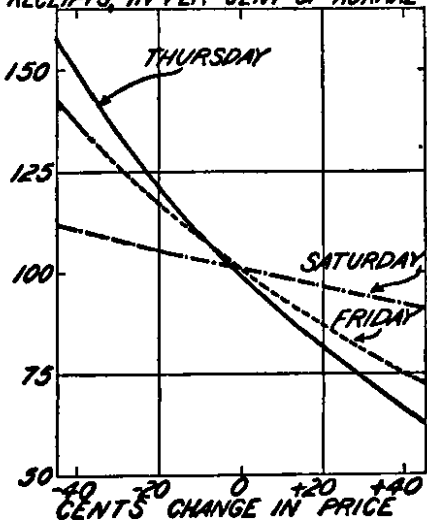


FIGURE 37. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM THE PRECEDING DAY, TO RECEIPTS ON THURSDAY, FRIDAY, AND SATURDAY, CHICAGO, 1921 TO 1928

When the price declined 40 cents from that on the preceding day, receipts on Thursday, Friday, and Saturday were, respectively, 151, 138, and 111 per cent of normal

the curve less in the case of receipts on Saturday, but the observations fit less closely to the mathematically fitted curve.

It might at first appear as though a larger percentage deviation of receipts from normal was required on days of normally heavy than on days of normally light receipts, to swing the price a given amount. Instead, however, the price changes more in accordance with changes in receipts on Monday and Thursday than on Saturday. Saturday's receipts are so small in any case, relative to the receipts on other days, that fluctuations

in the number have little effect on the price. Changes in Monday's and Thursday's receipts, on the other hand, have an important influence on price.

EFFECT OF DAILY PRICE CHANGES ON LATER RECEIPTS

Price is generally considered a resultant rather than a causal factor. Thus, it is often said that a given price has been arrived at through the interaction of supply and demand forces for the particular product concerned.

More and more attention is being given to the fact that price itself is an important factor governing future supply. Higher prices lead to a larger supply and lower prices to a smaller one. Thus, fluctuations in the supply of the product produced and offered for sale are partly attributable to variations in the price. To say that fluctuations in supply are more influential or causal than fluctuations in price, is like saying that the force of gravity is more effective than inertia in producing the swing of the pendulum.

Responses to price changes may be classified as production or marketing responses. In the case of livestock, evidences of the former are found in the number of animals bred. Changes in receipts at important markets over a short period of time give evidence of marketing responses to price.

The length of time elapsing between the stimulus and the response is very different for production and for marketing responses. For the former, the time conforms fairly closely to the period required to produce the particular product. This, of course, differs for different types of livestock. Cycles of production of varying lengths reflect this time factor. Since marketing responses assume a given supply produced and ready for sale, the biological element does not enter. The time elapsing between the stimulus of price change and the response as evidenced by market receipts is largely dependent on the distance of the particular market from the supply, the production center, or the place of storage, and on transportation facilities.

Because of this difference in time requirements, marketing responses are more difficult to measure than are production responses. Where the product can be stored in or near the market, responses to price changes may be almost instantaneous. Under such circumstances, many of the price changes may never be recorded and the whole picture may be blurred.

Since in the case of Chicago the storage of livestock in or near the market is limited and the centers of production are sufficiently removed, the measurement of marketing responses for hogs at that market was considered promising. Moreover, the availability of reliable data on the daily number of hogs received, and on daily prices, was a factor contributing to the selection of that market and that product for the present analysis.

METHOD OF ANALYSIS

In order to eliminate, in so far as possible, the effects of seasonal and cyclical variations in receipts and prices, as well as of normal daily varia-

tions in receipts, the following method of analysis was adopted. The effect of changes in the average price of hogs from Saturday to Monday on subsequent receipts is used as an illustration.

Twice during the period the price declined 40 cents from Saturday to Monday (table 30). The total number of hogs received on Monday on those two occasions was 134,300, or an average of 67,150 (table 31). On Tuesday, the following day, 63,400 were received, or an average of 31,700. On Wednesday an average of 20,200 hogs were received, and so on.

When the price advanced 25 cents from Saturday to Monday, on twenty occasions, Monday's receipts totaled 677,300, Tuesday's 496,000, Wednes-

TABLE 30. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO THE TOTAL NUMBER RECEIVED ON EACH OF THE SIX SUCCEEDING DAYS, CHICAGO, 1921 to 1928

Change in average price from Saturday to Monday	Frequency	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Monday
		Total daily receipts (hundreds)						
(Cents)								
-40	2	1,343	834	404	443	587	187	815
-35	5	2,891	2,101	1,052	1,438	1,418	403	2,542
-30	9	5,287	3,075	1,910	2,792	2,581	661	4,302
-25	10	5,875	3,653	1,771	3,036	2,607	648	4,633
-20	22	14,060	7,447	4,662	6,731	6,292	1,489	11,295
-15	28	15,904	8,936	6,307	8,672	7,514	1,846	18,870
-10	36	20,604	11,552	7,880	12,070	9,799	2,227	18,219
-5	38	19,521	12,366	7,464	12,834	10,105	2,154	18,652
0	27	13,761	7,867	5,561	9,269	7,460	1,573	13,955
+5	30	14,248	9,381	5,996	10,617	8,912	1,915	15,092
+10	40	18,677	11,508	8,476	13,987	11,270	2,646	20,886
+15	42	17,906	12,519	9,444	16,946	12,078	2,632	21,656
+20	27	10,894	7,474	5,543	8,868	6,691	1,268	12,037
+25	20	6,773	4,960	3,686	6,049	4,188	939	8,135
+30	11	4,302	2,381	1,917	3,177	2,406	468	4,760
+35	6	2,514	1,571	1,445	2,116	1,534	289	3,310
+40	2	784	660	409	326	542	124	589

TABLE 31. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO THE AVERAGE NUMBER RECEIVED ON EACH OF THE SIX SUCCEEDING DAYS, CHICAGO, 1921 to 1928

Change in average price from Saturday to Monday	Frequency	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Monday
		Average daily receipts (hundreds)						
(Cents)								
-40	2	672	317	202	222	294	78	408
-35	5	578	420	210	288	284	81	508
-30	9	587	343	212	310	267	73	473
-25	10	588	365	177	304	261	65	463
-20	22	639	339	212	306	286	68	518
-15	28	563	319	225	310	268	66	495
-10	36	572	321	219	335	272	62	506
-5	38	514	325	196	338	266	57	491
0	27	510	291	206	343	276	58	517
+5	30	475	313	200	354	297	64	503
+10	40	467	288	212	350	282	66	522
+15	42	426	322	225	403	302	66	516
+20	27	403	277	205	328	248	47	446
+25	20	339	248	184	302	209	47	407
+30	11	382	216	174	289	219	48	433
+35	6	419	262	241	353	256	48	552
+40	2	392	330	204	413	271	62	444

day's 368,600, and Thursday's 604,900. They averaged 33,865, 24,800, 18,430, and 30,245, respectively.

In measuring the changes which took place in receipts, Monday was taken as a base. Receipts on subsequent days of the week were expressed as a percentage of the receipts on Monday, the day of the change in price from the preceding day. The results are given in table 32.

TABLE 32. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO THE PERCENTAGE CHANGE, FROM MONDAY, IN THE NUMBER RECEIVED ON EACH OF THE SIX SUCCEEDING DAYS, CHICAGO, 1921 TO 1928

Change in average price from Saturday to Monday (Cents)	Frequency	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Monday
		Daily receipts in per cent of Monday						
-40	2	100.0	47.1	30.1	33.0	48.7	11.7	80.7
-35	5	100.0	72.7	36.4	49.7	49.0	13.9	87.9
-30	9	100.0	58.2	36.1	52.8	48.8	13.8	81.4
-25	10	100.0	62.2	30.1	51.7	44.4	11.0	78.0
-20	22	100.0	58.0	32.2	47.9	44.8	10.6	80.3
-15	28	100.0	56.2	39.7	54.8	47.2	11.6	87.2
-10	36	100.0	56.1	38.2	58.6	47.6	10.8	89.4
-5	38	100.0	63.3	38.2	66.7	51.9	11.0	96.6
0	27	100.0	57.2	40.4	67.4	54.1	11.4	101.8
+5	30	100.0	65.8	42.1	74.8	62.8	12.4	106.9
+10	40	100.0	61.6	45.4	74.9	60.2	14.2	111.8
+15	42	100.0	75.5	52.7	94.6	67.5	14.7	120.9
+20	27	100.0	68.6	50.9	81.4	61.4	11.6	110.6
+25	20	100.0	73.2	54.4	89.3	61.8	13.9	120.1
+30	11	100.0	56.7	45.6	75.6	67.2	11.1	113.2
+35	6	100.0	62.5	57.5	84.2	61.0	11.5	121.7
+40	2	100.0	84.2	52.2	105.4	69.1	15.6	112.4

When the average price declined 25 cents from Saturday to Monday, Tuesday's receipts averaged 62.2 per cent of Monday's receipts, Wednesday's receipts averaged 30.1 per cent, and Thursday's averaged 51.7 per cent. When the price advanced 25 cents from Saturday to Monday, receipts on Tuesday were 73.2 per cent of those on Monday, those on Wednesday were 54.4 per cent, and those on Thursday were 89.3 per cent.

In general, the percentages for each day increased with price advances and decreased with price declines. The rate of increase or decrease varied with the day, being much more on certain days than on others.

The relative effect of price changes on the receipts on different days was somewhat blurred by the fact that there were normal variations in the number of hogs received at Chicago on different days of the week. Monday's receipts for the entire period averaged 49,000, Tuesday's 30,500, Wednesday's 20,700, Thursday's 33,400, Friday's 26,700, and Saturday's 5,900 (table 5, page 12).

In order to convert all percentages in table 32 to a comparable basis, the average number of hogs received on each day during the entire period was considered normal for that day. Thus, Tuesday's receipts were normally 62.4 per cent of Monday's receipts, Wednesday's were 42.3 per cent, Thursday's were 68.3 per cent, Friday's were 54.5 per cent, and Saturday's were 12.1 per cent. By dividing the several percentages in table 32 by the normal for the corresponding day, all items were made comparable.

The results of this process are given in tables 33 and 34. When the average price of hogs declined 20 cents per hundredweight from Saturday to Monday, Tuesday's receipts were 85 per cent of what they would normally be, based on Monday's receipts. Wednesday's receipts were 78 per cent, and Thursday's receipts 70 per cent, of the normally expected number for those days. Or, in other words, a decline of 20 cents in the price of hogs from Saturday to Monday was followed by a decrease of 15 per cent in Tuesday's receipts, 22 per cent in Wednesday's receipts, and 30 per cent in Thursday's receipts.

TABLE 33. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO THE PERCENTAGE CHANGE (CORRECTED FOR NORMAL DAILY VARIATIONS), FROM MONDAY, IN THE NUMBER RECEIVED ON EACH OF THE SIX SUCCEEDING DAYS, CHICAGO, 1921 TO 1928

Change in average price from Saturday to Monday (Cents)	Frequency	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Monday
		Daily receipts in per cent of Monday (normal = 100)						
-40	2	100.0	75.5	71.2	48.3	80.2	95.7	60.7
-35	5	100.0	116.5	85.1	72.8	89.9	114.9	87.9
-30	9	100.0	93.8	85.3	77.3	89.5	103.3	81.4
-25	10	100.0	99.7	71.2	75.7	81.5	90.9	78.9
-20	22	100.0	84.9	78.5	70.1	82.2	87.6	80.3
-15	28	100.0	80.1	93.9	79.8	86.6	95.9	87.2
-10	36	100.0	89.9	90.3	85.8	87.3	89.3	88.4
-5	38	100.0	101.4	90.3	95.2	95.0	90.9	95.5
0	27	100.0	91.7	95.5	98.7	99.3	94.2	101.5
+5	30	100.0	105.4	99.5	106.1	114.7	110.7	105.9
+10	40	100.0	98.7	107.3	109.7	110.6	117.4	111.8
+15	43	100.0	121.0	124.6	138.5	123.9	121.5	120.9
+20	27	100.0	109.9	120.3	119.2	112.7	95.9	110.5
+25	20	100.0	117.3	128.5	130.7	113.4	114.9	120.1
+30	11	100.0	90.9	107.8	110.7	105.1	91.7	113.3
+35	6	100.0	100.2	135.9	123.3	111.9	95.0	131.7
+40	2	100.0	134.9	123.4	154.3	126.8	130.6	113.4

TABLE 34. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO THE PERCENTAGE CHANGE (CORRECTED FOR NORMAL DAILY VARIATIONS), FROM MONDAY, IN THE NUMBER RECEIVED ON EACH OF THE SIX SUCCEEDING DAYS, CHICAGO, 1921 TO 1928

Change in average price from Saturday to Monday (Cents)	Frequency	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Monday
		Per cent change in daily receipts from Monday						
-40	2	0	-24.5	-28.8	-51.7	-19.8	-3.3	-39.3
-35	5	0	+16.5	-13.9	-27.2	-10.1	+14.9	-12.1
-30	9	0	-6.7	-14.7	-22.7	-10.5	+3.3	-18.6
-25	10	0	-0.3	-28.8	-24.3	-18.5	-9.1	-11.1
-20	22	0	-15.1	-21.5	-29.9	-17.8	-12.4	-19.7
-15	28	0	-9.9	-6.1	-20.3	-13.4	-4.1	-12.8
-10	36	0	-10.1	-9.7	-14.2	-12.7	-10.7	-11.6
-5	38	0	+1.4	-9.7	-3.8	-5.0	-9.1	-4.5
0	27	0	-8.3	-4.5	-1.3	-0.7	-5.8	+1.5
+5	30	0	+5.4	-0.5	+9.1	+14.7	+10.7	+5.9
+10	40	0	-1.3	+7.3	+9.7	+10.6	+17.4	+11.8
+15	43	0	+21.0	+24.6	+38.5	+23.9	+21.5	+20.9
+20	27	0	+9.9	+20.3	+19.2	+12.7	-4.1	+10.5
+25	20	0	+17.3	+28.5	+30.7	+13.4	+14.9	+20.1
+30	11	0	-9.1	+7.8	+10.7	+5.1	-8.3	+13.3
+35	6	0	+0.2	+35.9	+23.3	+11.9	-5.0	+31.7
+40	2	0	+34.9	+23.4	+54.3	+26.8	+30.6	+13.4

When the average price advanced 20 cents from Saturday to Monday, Tuesday's receipts were 110 per cent of what they would normally be, based on Monday's receipts, Wednesday's receipts were 120 per cent, and Thursday's were 119 per cent. Thus, an advance of 20 cents in the price of hogs from Saturday to Monday was followed by an increase of 10 per cent in Tuesday's receipts, 20 per cent in Wednesday's receipts, and 19 per cent in Thursday's receipts.

Plottings of the data for each day indicated that the relationships between price changes and subsequent receipts were approximately linear.⁴ Assuming linear relationships, straight lines were fitted to the percentages for each day by the method of least squares (figures 38 to 43). In calculating the mathematical equations for the lines, each percentage corresponding to a given price change was weighted according to the frequency of that price change.

Based on readings from the fitted lines, Tuesday's receipts of hogs averaged 17 per cent above the normally expected number when the average

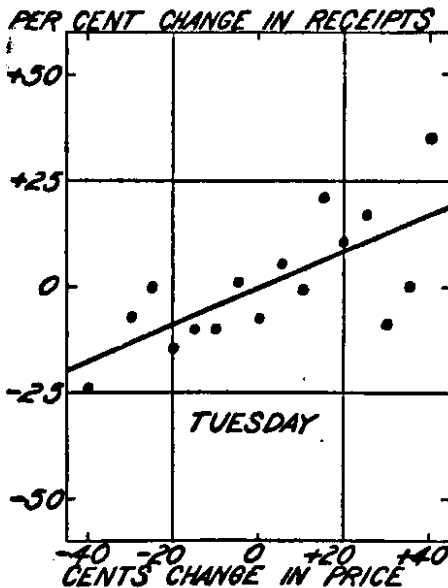


FIGURE 38. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM MONDAY TO TUESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday was followed by an increase of 11 per cent in Tuesday's receipts; a decline of 25 cents was followed by a decrease of 11 per cent

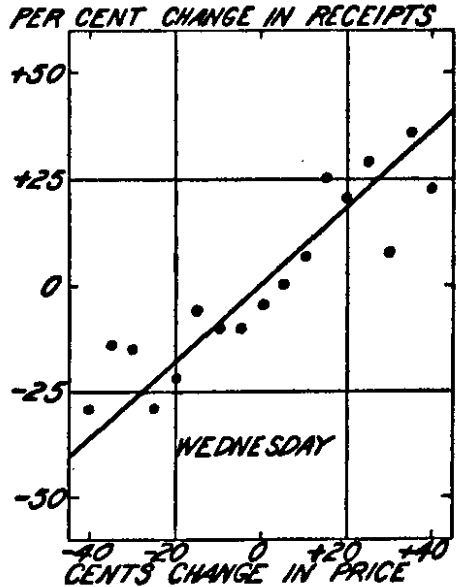


FIGURE 39. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM MONDAY TO WEDNESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday was followed by an increase of 22 per cent in Wednesday's receipts; a decline of 25 cents was followed by a decrease of 22 per cent

⁴ There is some evidence of a flattening of the curves with large price changes. Undoubtedly, very large changes are not so effective, proportionately, as are small changes. However, within the limits of the data used, the degree of curvilinearity was considered insufficiently pronounced to justify the use of more complex mathematical relationships than straight lines. The author first attempted the drawing of free-hand curves (*Farm Economics*, no. 53, pages 926 to 929), but later found linear relationships to be more satisfactory.

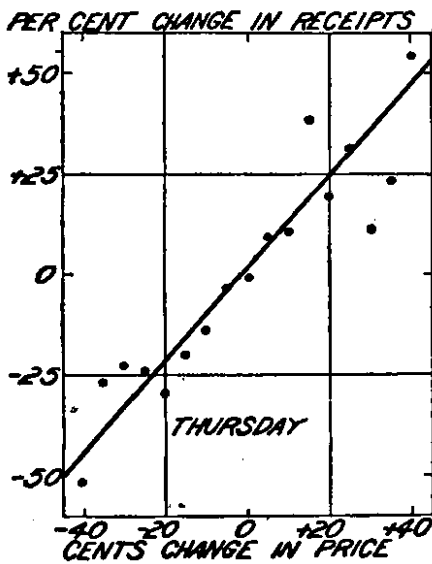


FIGURE 40. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM MONDAY TO THURSDAY, CHICAGO, 1921 TO 1928

Receipts on Thursday were greatly affected by the price changes from Saturday to Monday. An advance of 25 cents increased receipts on Thursday by 30 per cent; an advance of 40 cents increased them by 47 per cent

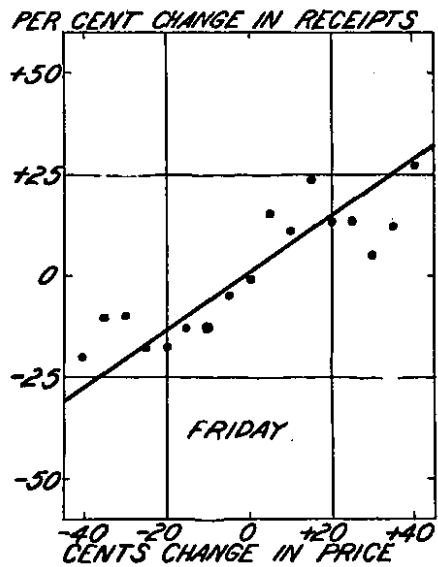


FIGURE 41. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM MONDAY TO FRIDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday was followed by an increase of 18 per cent in Friday's receipts; a decline of 25 cents was followed by a decrease of 17 per cent

price advanced 40 cents from Saturday to Monday (figure 38). Wednesday's receipts averaged 36 per cent, Thursday's 47 per cent, Friday's 29 per cent, Saturday's 16 per cent, and the following Monday's 28 per cent (figures 39 to 43). When the price declined 40 cents from Saturday to Monday, receipts on Tuesday averaged 17 per cent below normal, on Wednesday 36 per cent, on Thursday 45 per cent, on Friday 28 per cent, on Saturday 13 per cent, and on the following Monday 22 per cent.

In other words, an advance in the price from Saturday to Monday was followed by an increase in the number of hogs received on each of the six succeeding days. A decline in price was followed by a decrease in receipts. With a 40-cent advance, the increases were 17, 36, 47, 29, 16, and 28 per cent, respectively. With a 40-cent decline, the decreases were 17, 36, 45, 28, 13, and 22 per cent.

Further adjustments were made to the straight lines as fitted, to meet an assumption that no change in receipts should correspond with no change in price. In this way all lines were focused at a common point. This facilitated a direct comparison of the slopes of different lines.

The relative slopes of the straight lines so fitted indicate the *average* percentage change in the receipts of hogs corresponding to a given ab-

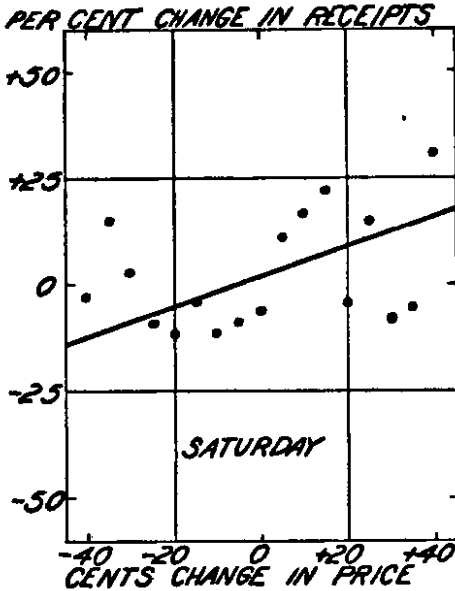


FIGURE 42. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM MONDAY TO SATURDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday was followed by an increase of 11 per cent in Saturday's receipts; a decline of 25 cents was followed by a decrease of 7 per cent

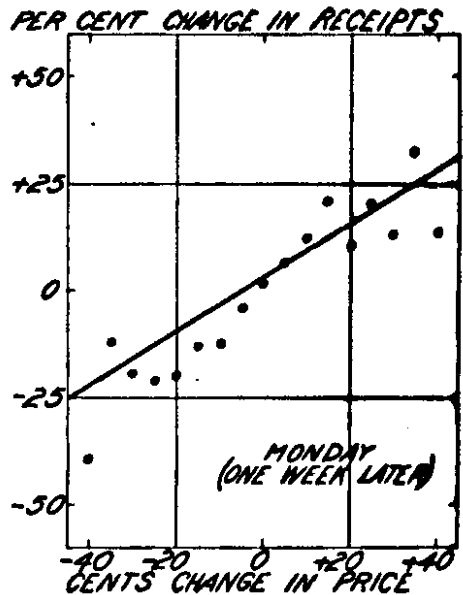


FIGURE 43. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM MONDAY TO THE FOLLOWING MONDAY, CHICAGO, 1921 TO 1928

Receipts of hogs one week following an advance of 25 cents in the price from Saturday to Monday were 19 per cent greater than the receipts on Monday, the day of the change in price

solute change in the price. Thus, for example, Tuesday's receipts changed 2.08 per cent, Wednesday's 4.39 per cent, and Thursday's 5.63 per cent, following a change of 5 cents in the price from Saturday to Monday.

DAILY VARIATIONS

The above-described procedure was followed in analyzing the effect of price changes each day of the week on subsequent receipts of hogs. On all days, advances in the price stimulated the movement of hogs to market, and declines in the price retarded the movement.

The percentage changes in the receipts of hogs on each of the six subsequent market days as related to a change of 5 cents in the average price are given in table 35. A change of 5 cents in the price from Saturday to Monday was followed by a change of 2.08 per cent in Tuesday's receipts. An advance was followed by a 2.08-per-cent increase, and a decline by a similar decrease. The effect on Wednesday's receipts was more than twice as great, 4.39 per cent. Receipts on Thursday were affected the most, 5.63 per cent.

With the single exception of changes in the price from Friday to Saturday, the greatest effect was on receipts the third day after the price

TABLE 35. EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS ON THE RECEIPTS ONE TO SIX DAYS LATER, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	One day later	Two days later	Three days later	Four days later	Five days later	Six days later
	Per cent change in receipts					
Saturday to Monday.....	2.08	4.39	5.63	3.44	1.80	3.10
Monday to Tuesday.....	1.71	3.93	6.22	5.31	3.93	1.86
Tuesday to Wednesday.....	1.31	4.36	7.58	4.10	3.00	4.36
Wednesday to Thursday.....	1.23	5.39	5.40	4.47	3.20	3.95
Thursday to Friday.....	0.48	3.85	5.74	3.71	3.43	3.88
Friday to Saturday.....	1.22	2.54	2.61	3.18	3.92	3.71

change. Some shippers were sufficiently near the market to receive the daily price report, act upon it, and have the effect of their decision felt at the market on the following day. For others, two days were necessary. Three days were required by most shippers before the price stimulus produced the highest degree of response.

The lacking effectiveness of changes in the price of hogs from Friday to Saturday on later receipts can be accounted for by the character of the Saturday market. During the entire eight-year period from 1921 to 1928, only 3.5 per cent of the hogs received at Chicago were received on Saturday. From the standpoint of prices, Saturday was typically a poor market. As a consequence, changes in the price from Friday to Saturday were not considered indicative of the market condition for the following week. Undoubtedly a large part of the effect which changes in the price from Friday to Saturday had on later receipts were attributable to the correlative influence of price changes on other days.

Monday's receipts of hogs varied principally in response to changes in the price from Wednesday to Thursday (table 36). In all cases, with

TABLE 36. EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS ON THE RECEIPTS EACH DAY OF THE WEEK, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
	Per cent change in receipts					
Saturday to Monday.....	3.10	2.08	4.39	5.63	3.44	1.80
Monday to Tuesday.....	3.93	1.86	1.71	3.93	6.22	5.31
Tuesday to Wednesday.....	4.10	3.00	4.36	1.31	4.36	7.58
Wednesday to Thursday.....	5.40	4.47	3.20	3.95	1.23	5.39
Thursday to Friday.....	3.85	5.74	3.71	3.43	3.88	0.48
Friday to Saturday.....	1.22	2.54	2.61	3.18	3.92	3.71

the exception of Wednesday, the price change three days before was the most effective. The number of hogs received on Wednesday was affected more by changes in the price from Saturday to Monday than by changes from Friday to Saturday.

The greatest effect of any price change was the response of Saturday's receipts to changes in the price from Tuesday to Wednesday. Each 5-cent change was followed by a change of 7.58 per cent in the number of hogs received. Saturday's receipts were least affected by changes in

the price from Thursday to Friday. That number varied less than one-half of one per cent following a change of 5 cents in the price.

The relative effect of various changes in the price, both advances and declines, on receipts one, two, and three days later, is shown in figures 44 to 49, inclusive. In all cases the effect of the change in the price was greater on receipts three days later than on receipts two days later. Moreover, the effect was greater two days later than one day later.

It should be noted also that the lag is measured in the number of *market* days. This means that the insertion of a Sunday, with no market, did not alter the order of responses, the number of days with markets remaining constant.

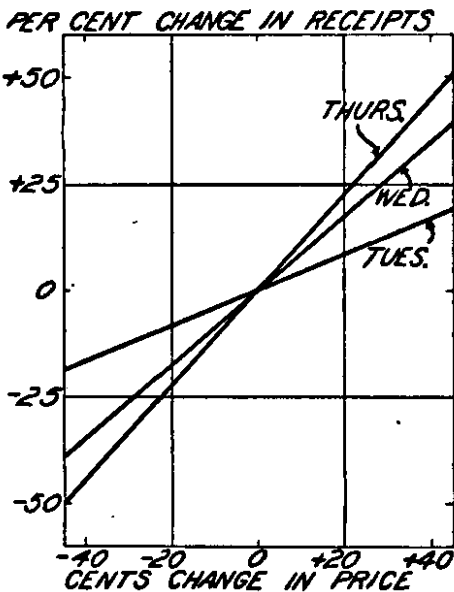


FIGURE 44. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM MONDAY TO TUESDAY, MONDAY TO WEDNESDAY, AND MONDAY TO THURSDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday was followed by an increase of 10 per cent in Tuesday's receipts, 22 per cent in Wednesday's receipts, and 28 per cent in Thursday's receipts

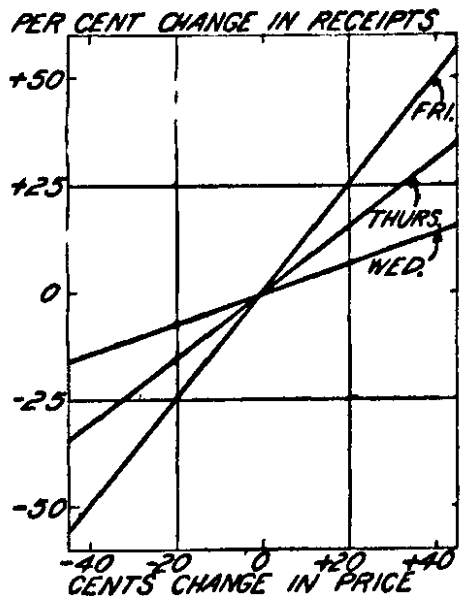


FIGURE 45. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM MONDAY TO TUESDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM TUESDAY TO WEDNESDAY, TUESDAY TO THURSDAY, AND TUESDAY TO FRIDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Monday to Tuesday was followed by an increase of 9 per cent in Wednesday's receipts, 20 per cent in Thursday's receipts, and 31 per cent in Friday's receipts

CHANGES IN TOP AND AVERAGE PRICES COMPARED

Although, in general, top and average prices move together from day to day, the size of such changes often differs, and sometimes the direction as well. Seasonal, cyclical, and even daily differentials in the spread between the two prices are evidences of the lack of complete sympathetic movement in both.

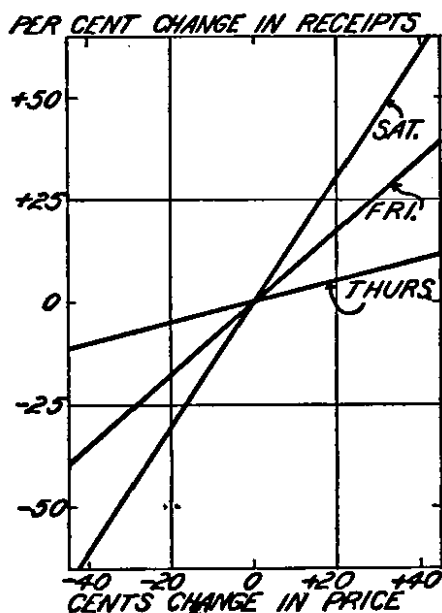


FIGURE 46. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM TUESDAY TO WEDNESDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM WEDNESDAY TO THURSDAY, WEDNESDAY TO FRIDAY, AND WEDNESDAY TO SATURDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Tuesday to Wednesday was followed by an increase of 7 per cent in Thursday's receipts, 22 per cent in Friday's receipts, and 38 per cent in Saturday's receipts

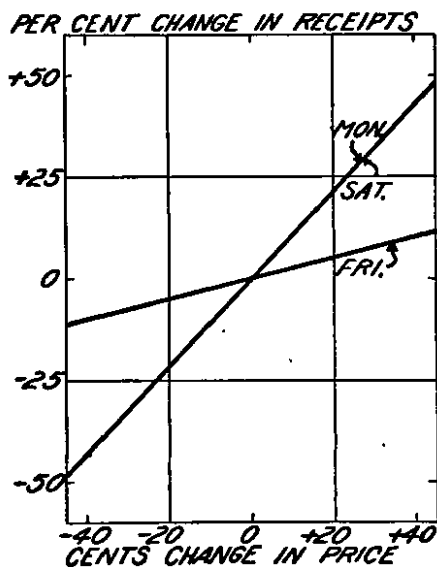


FIGURE 47. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM WEDNESDAY TO THURSDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM THURSDAY TO FRIDAY, THURSDAY TO SATURDAY, AND THURSDAY TO MONDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Wednesday to Thursday was followed by an increase of 6 per cent in Friday's receipts, 26.9 per cent in Saturday's receipts, and 27 per cent in Monday's receipts

Hog shippers act on the basis of the general tone of the market rather than according to any particular quoted price. In measuring responses, the question arises as to what price best reflects this general tone. If one price is appreciably better than another, there should be significant differences in the responses made to the two prices.

The relative effect of changes in the top and the average prices of hogs from Saturday to Monday during the 1921-1928 period, upon the receipts on Tuesday, Wednesday, and Thursday, is shown in table 37. Each additional change of 5 cents in the top price increased or decreased Tuesday's receipts 2.35 per cent. A corresponding change in the average price affected Tuesday's receipts by 2.08 per cent, or somewhat more than one-fourth of one per cent less. The differences in the effect on Wednesday's and Thursday's receipts were 0.08 and 0.21 per cent, respectively, for each change of 5 cents in the two prices from Saturday to Monday.

On each of the three days—Tuesday, Wednesday, and Thursday—receipts fluctuated more with changes in the top price than with changes

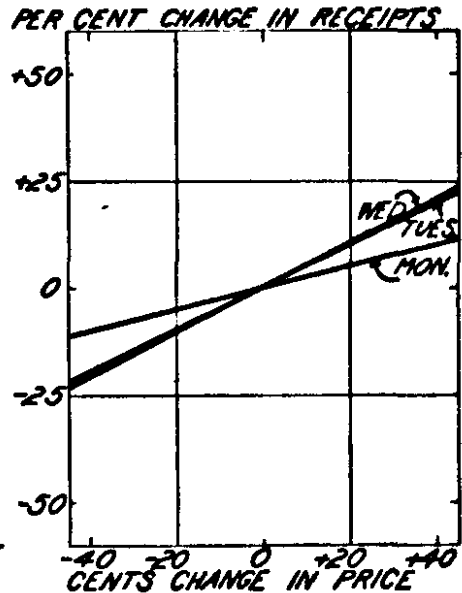
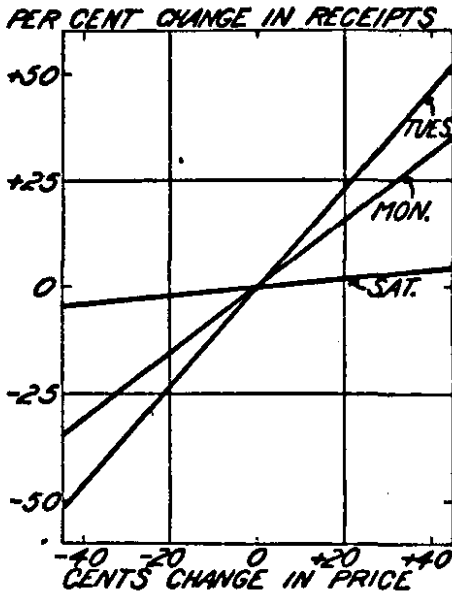


FIGURE 48. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM THURSDAY TO FRIDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM FRIDAY TO SATURDAY, FRIDAY TO MONDAY, AND FRIDAY TO TUESDAY, CHICAGO, 1921 TO 1928

FIGURE 49. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM FRIDAY TO SATURDAY, TO PERCENTAGE CHANGES IN RECEIPTS FROM SATURDAY TO MONDAY, SATURDAY TO TUESDAY, AND SATURDAY TO WEDNESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Thursday to Friday was followed by an increase of 2 per cent in Saturday's receipts, 19 per cent in Monday's receipts, and 29 per cent in Tuesday's receipts

An advance of 25 cents in the price of hogs from Friday to Saturday was followed by an increase of 6 per cent in Monday's receipts, 12.7 per cent in Tuesday's receipts, and 13 per cent in Wednesday's receipts

TABLE 37. RELATIVE EFFECT OF CHANGES IN TOP AND AVERAGE PRICES OF HOGS FROM SATURDAY TO MONDAY, UPON RECEIPTS ON TUESDAY, WEDNESDAY, AND THURSDAY, CHICAGO

With a change of 5 cents in price	Tuesday	Wednesday	Thursday
	Per cent change in receipts		
In 1921-1928:			
Top prices	2.35	4.47	5.64
Average prices	2.08	4.39	5.63
In 1910-1913:			
Top prices	7.50	8.64	9.39
Average prices	7.72	8.62	9.92

in the average price. However, this fact is not particularly significant, since the differences were small.

A comparison of the relation of changes in top and average prices from Saturday to Monday ranging from declines of 40 cents to advances of the same amount, to changes in Wednesday's receipts, is presented in figure 50. The relation of the same changes in the prices to changes in

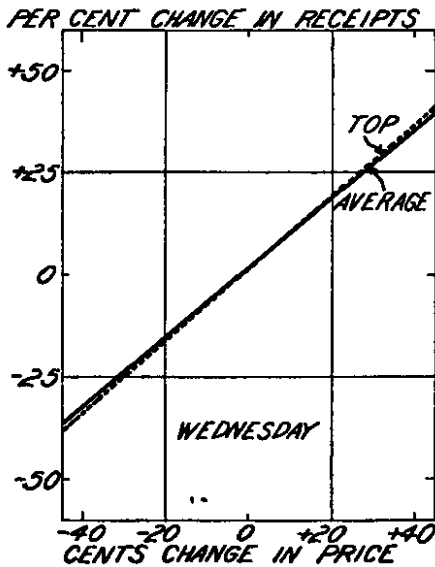


FIGURE 50. RELATIVE EFFECT OF CHANGES IN TOP AND AVERAGE PRICES OF HOGS FROM SATURDAY TO MONDAY, ON WEDNESDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

A change of 40 cents in the top price changed Wednesday's receipts 36 per cent. A change of 40 cents in the average price changed Wednesday's receipts 35 per cent

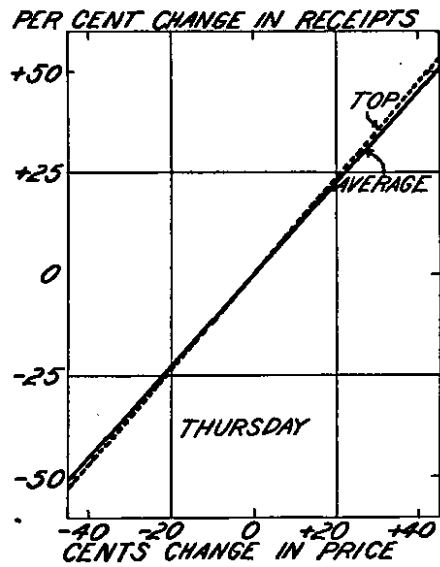


FIGURE 51. RELATIVE EFFECT OF CHANGES IN TOP AND AVERAGE PRICES OF HOGS FROM SATURDAY TO MONDAY, ON THURSDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

A change of 40 cents in the top price of hogs from Saturday to Monday changed Thursday's receipts 47 per cent. A change of 40 cents in the average price changed Thursday's receipts 45 per cent

Thursday's receipts is shown in figure 51. Differences in the slopes of the two sets of lines are slight and not significant.

During an earlier period, 1910 to 1913, the effect of changes in the average price from Saturday to Monday was greater than that of changes in the top price (table 37, and figures 52 and 53). This was directly opposite to the situation in the later period. Moreover, the difference in the effectiveness of the two prices was about the same. Each additional change of 5 cents in the top price of hogs before the war affected Tuesday's receipts by 7.50 per cent. A similar change in the average price was approximately one-fourth of one per cent more effective. The greatest difference in effectiveness was on Thursday, when receipts fluctuated one-half of one per cent more with a change of 5 cents in the average price than with a change of 5 cents in the top price.

The foregoing illustrations for two different periods serve to bring out the fact that top and average prices are equally satisfactory for use in measuring price responses. Over a long period of time the two price quotations fluctuate together sufficiently to insure no significant differences in their effects on later receipts.

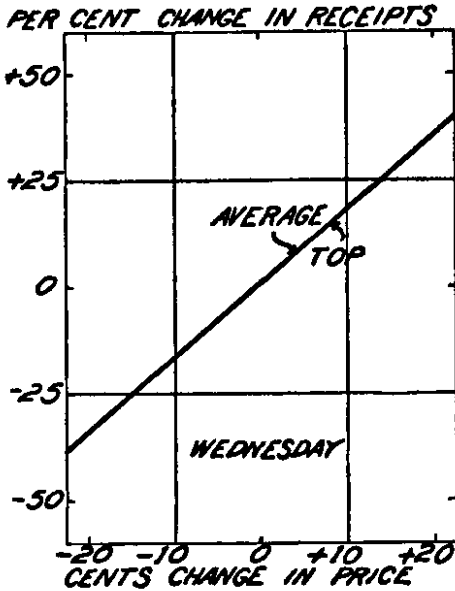


FIGURE 52. RELATIVE EFFECT OF CHANGES IN TOP AND AVERAGE PRICES OF HOGS FROM SATURDAY TO MONDAY, ON WEDNESDAY'S RECEIPTS, CHICAGO, 1910 TO 1913

A change of 20 cents in the top price changed Wednesday's receipts 35 per cent. A change of 20 cents in the average price changed Wednesday's receipts 35 per cent.

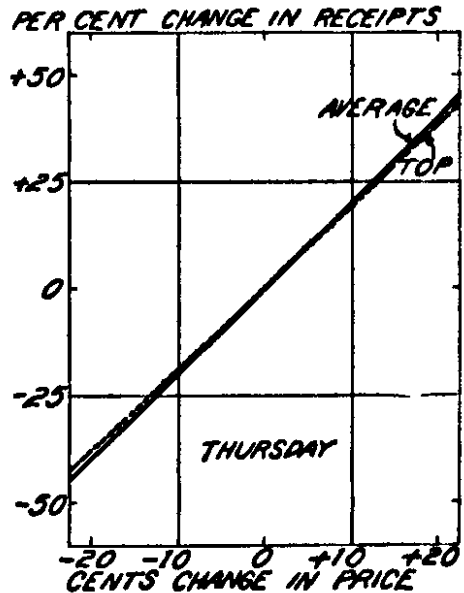


FIGURE 53. RELATIVE EFFECT OF CHANGES IN TOP AND AVERAGE PRICES OF HOGS FROM SATURDAY TO MONDAY, ON THURSDAY'S RECEIPTS, CHICAGO, 1910 TO 1913

A change of 20 cents in the top price changed Thursday's receipts 38 per cent. A change of 20 cents in the average price changed Thursday's receipts 40 per cent.

RELATIVE EFFECT OF DAILY PRICE CHANGES ON LATER RECEIPTS

BEFORE AND AFTER THE WAR

The war period altered many economic relationships. The price mechanism, especially, was subjected to much change. The general level of prices rose very high, dropped abruptly, and remained for a long time at a level approximately 50 per cent above that of the pre-war years.

The hog market, in addition to price-level fluctuations, was subjected to alterations of various sorts. Among other things, attempts were made to stabilize market movement by such means as zoning systems, referred to on page 11.

Because of the somewhat abnormal conditions of the post-war period used in this study, it seemed desirable to make a few comparisons with pre-war data. The four-year period from 1910 to 1913 was used. It is comparable with the 1921-1924 period in so far as the phase of the hog-price cycle is concerned.

In terms of cents per hundredweight, hog prices fluctuated from day to day through a range approximately twice as great after the war as before. Also, the general level of hog prices was higher during the latter period.

As might be expected with prices fluctuating half as violently in the pre-war period, the same price change affected receipts almost twice

as much before as after the war. That is to say, a change of 20 cents in the price of hogs before the war was about twice as effective as a change of 20 cents after the war, or about equally effective as a change of 40 cents.

A change of 5 cents in price from Saturday to Monday during the 1910-1913 period was followed by a change of 7.72 per cent in Tuesday's receipts of hogs, 8.82 per cent in Wednesday's, and 9.92 per cent in

TABLE 38. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, UPON THE RECEIPTS ON TUESDAY, WEDNESDAY, AND THURSDAY, BEFORE AND AFTER THE WAR, CHICAGO, 1910-1913 AND 1921-1924

With a change of 5 cents in price	Tuesday	Wednesday	Thursday
	Per cent change in receipts		
Before the war (1910-1913).....	7.72	8.82	9.92
After the war (1921-1924).....	1.56	4.02	5.42

Thursday's (table 38). The same price change in the 1921-1924 period was followed by changes of 1.56, 4.02, and 5.42 per cent, respectively, in receipts on the three following days.

Before the war, an advance of 20 cents in the price from Saturday to Monday increased Thursday's receipts 40 per cent. After the war a 20-cent change increased Thursday's receipts only 22 per cent. A change of 37 cents in the price was required for the same effect on receipts after the war as a change of 20 cents had before the war.

The essential differences between the two periods 1910 to 1913 and 1921 to 1924 were as follows: the general price level was approximately 50 per cent higher; prices at Chicago averaged about 7 per cent higher; and the prices fluctuated twice as violently from day to day in the later period as in the earlier.

Even with these factors taken into account, price changes affected later receipts more before the war than they did after.

AT THE BOTTOM AND THE TOP OF THE CYCLE

During the first half of the 1921-1928 period, the number of hogs received at Chicago was large and

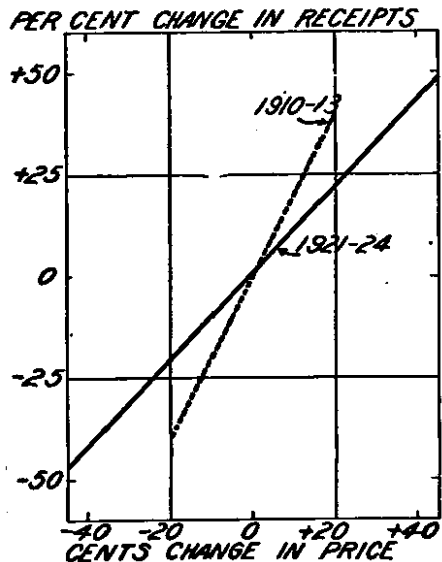


FIGURE 54. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON THURSDAY'S RECEIPTS BEFORE AND AFTER THE WAR, CHICAGO, 1910 TO 1913 AND 1921 TO 1924

Similar price changes were much more effective in increasing and decreasing receipts of hogs before the war than after. However, prices fluctuated less violently from day to day in the earlier period.

prices were low. During the second half, the receipts were much less and prices were on a higher level. Hogs were at the bottom of their price cycle during the first period, and at the top in the second.

A given change in the price affected later receipts somewhat more at the top of the cycle than at the bottom (table 39 and figure 55). A change of 5 cents from Saturday to Monday affected Tuesday's receipts by 1.56 per cent at the bottom of the cycle and by 2.94 per cent at the top. Receipts on Wednesday and Thursday showed differences of 0.89 and 0.47 per cent, respectively, during the two periods.

TABLE 39. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, UPON THE RECEIPTS ON TUESDAY, WEDNESDAY, AND THURSDAY, AT THE BOTTOM AND AT THE TOP OF THE HOG-PRICE CYCLE, CHICAGO, 1921-1924 AND 1925-1928

With a change of 5 cents in price	Tuesday	Wednesday	Thursday
	Per cent change in receipts		
Bottom of the cycle (1921-1924).....	1.56	4.02	5.42
Top of the cycle (1925-1928).....	2.94	4.91	5.89

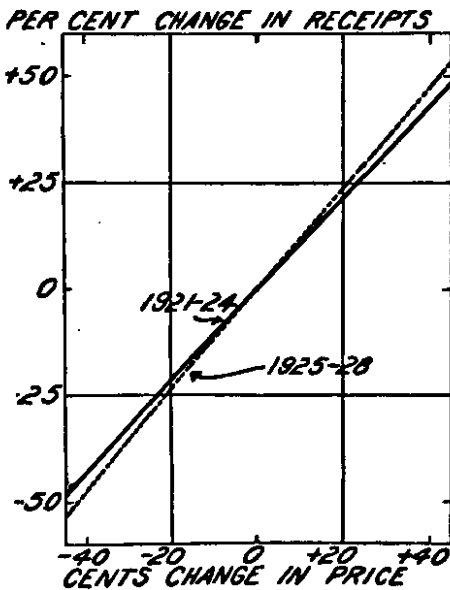


FIGURE 55. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON THURSDAY'S RECEIPTS AT THE BOTTOM AND AT THE TOP OF THE HOG-PRICE CYCLE, CHICAGO, 1921 TO 1924 AND 1925 TO 1928

The difference in the effect of a given change in price at the bottom and at the top of the hog-price cycle was not great. Changes at the top of the cycle were slightly more effective

Since a price change of 40 cents at a high price level is proportionately smaller than the same change at a low level, it would normally be expected that the effect on later receipts would be greater at the lower level. However, such was not the case. Price changes were more effective at the top of the hog-price cycle. Apparently, when farmers have fewer hogs to market and prices are high, they follow the market somewhat more closely.

DURING THE WINTER AND THE SUMMER MONTHS

Price changes affected later receipts more in the winter than in the summer months (table 40 and figure 56). The winter months included October to March, inclusive, and the summer months the remaining six.

In the winter a 5-cent change in price from Saturday to Monday was followed by a change of 2.95 per cent in Tuesday's receipts, 4.75 per cent in Wednesday's, and 6.54 per cent in Thursday's. In the summer the corresponding percentages were 2.77, 4.32, and 5.78.

TABLE 40. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, UPON THE RECEIPTS ON TUESDAY, WEDNESDAY, AND THURSDAY, DURING THE WINTER AND THE SUMMER MONTHS, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Tuesday	Wednesday	Thursday
	Per cent change in receipts		
In winter months.....	2.95	4.75	6.54
In summer months.....	2.77	4.32	5.78

The fact that price changes were more effective in increasing and decreasing later receipts in the winter than in the summer, can be explained on the basis of the relative opportunities which farmers have of responding to the price stimulus in the two seasons. In the summer, farm operations are of such a nature that hogs cannot be shipped to market in response to the price stimulus alone. Hogs are often shipped when farm work can afford the time. In the winter, on the other hand, the factor determining when hogs shall be sent to market is not so much a matter of task conflicts. The market condition, as reflected in prices, is relatively more important.

WHEN THE SPREAD BETWEEN TOP AND AVERAGE PRICES WAS LARGE AND WHEN IT WAS SMALL

The difference, or spread, between the average and the top prices of hogs is a rough measure of the degree of uniformity in the quality of hogs marketed. When the spread is small, the quality of all hogs sold is fairly uniform. When the spread is large, the quality is highly variable.

In comparing the effect of price changes on later receipts, with different spreads between the two price quotations, a difference of less than 60 cents per hundredweight was considered a small spread. A difference of 60 cents or more was considered a large spread.

Equal changes in price were more effective when the spread between the two prices was small than when it was large. When the spread was small, a change of 5 cents in the average price from Saturday to Monday was followed by a change of 4.25 per cent in Tuesday's receipts, 6.16 per cent in Wednesday's, and 8.74 per cent in Thursday's (table 41). When the spread was large, the corresponding percentages were 2.41, 4.06, and 4.66.

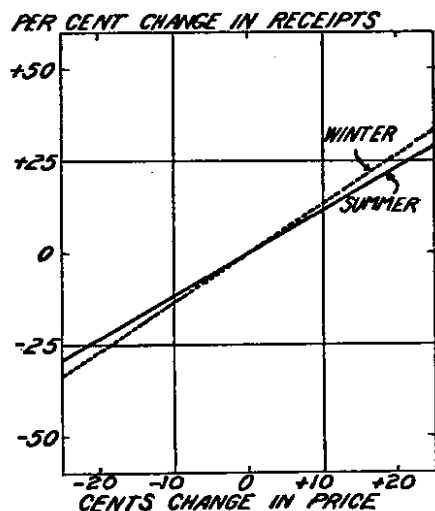


FIGURE 56. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON THURSDAY'S RECEIPTS DURING THE WINTER AND THE SUMMER MONTHS, CHICAGO, 1921 TO 1928

Receipts on Thursday were affected by changes in the price from Saturday to Monday to a greater extent during the winter than during the summer

TABLE 41. RELATIVE EFFECT OF CHANGES IN TOP AND AVERAGE PRICES OF HOGS FROM SATURDAY TO MONDAY, UPON THE RECEIPTS ON TUESDAY, WEDNESDAY, AND THURSDAY, WHEN THE SPREAD BETWEEN THE PRICES WAS LARGE AND WHEN IT WAS SMALL, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Tuesday	Wednesday	Thursday
	Per cent change in receipts		
Average prices:			
Large spread.....	2.41	4.06	4.66
Small spread.....	4.25	6.16	8.74
Top prices:			
Large spread.....	2.47	4.99	6.03
Small spread.....	2.83	5.26	7.32

These differences are, to a large extent, attributable to the quality factor. Producers follow the market more closely when they are marketing a high-quality product than when they are marketing a product of low quality.

Moreover, since the price spread is normally very large in July and August, two summer months when much of the low-grade breeding stock is sent to market, the difference in the effectiveness of price changes in the winter and in the summer (figure 56) can be explained, at least in part, by this factor. The difference in the price spread is the major

influence, however, as evidenced by the relative slope of the lines in figures 56 and 57.

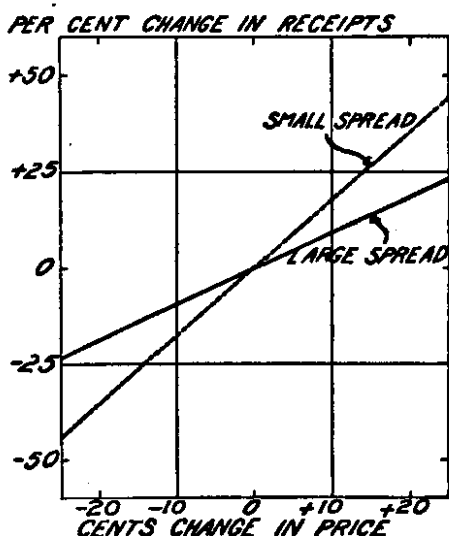


FIGURE 57. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON THURSDAY'S RECEIPTS WHEN THE SPREAD BETWEEN THE TOP AND THE AVERAGE PRICES WAS LARGE AND WHEN IT WAS SMALL, CHICAGO, 1921 TO 1928

Changes in the average price affected later receipts more when the spread was small than when it was large

Further proof of the significance of quality is shown in figures 58 and 59. Whereas responses to changes in the average price were greater than to changes in the top price when the spread was small, the reverse was the case when the spread was large. In other words, the top price was more indicative than the average price of what might be expected for good hogs when the quality was highly variable. Since responses were greater for relatively high-quality than for low-quality hogs, top-price changes were more effective.

DURING PERIODS OF FALLING AND OF RISING PRICES

In measuring the relative effect of price changes on later receipts of hogs during periods of falling and of rising prices, the two periods were defined as follows: periods of falling prices were those in which

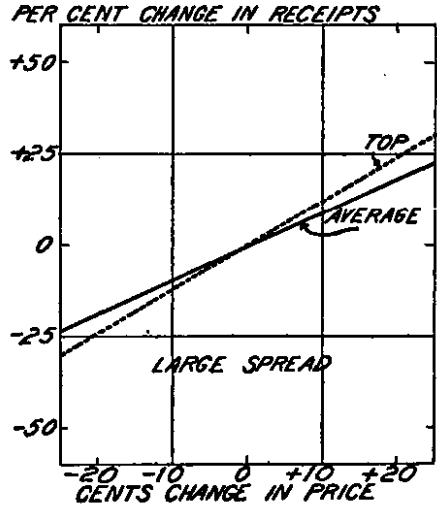
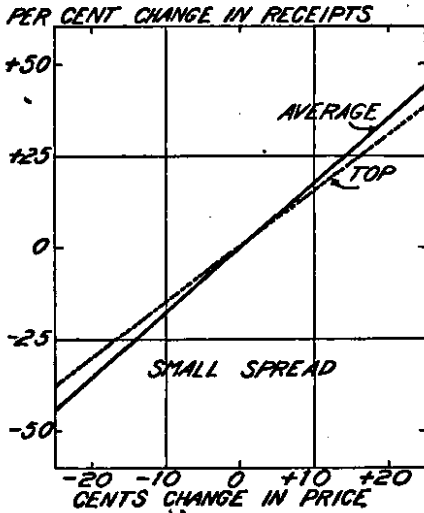


FIGURE 58. RELATIVE EFFECT OF CHANGES IN TOP AND AVERAGE PRICES OF HOGS FROM SATURDAY TO MONDAY ON THURSDAY'S RECEIPTS WHEN THE SPREAD BETWEEN THE TWO PRICES WAS SMALL, CHICAGO, 1921 TO 1928

When the spread was small, changes in average prices were more effective than changes in top prices

FIGURE 59. RELATIVE EFFECT OF CHANGES IN TOP AND AVERAGE PRICES OF HOGS FROM SATURDAY TO MONDAY ON THURSDAY'S RECEIPTS WHEN THE SPREAD BETWEEN THE TWO PRICES WAS LARGE, CHICAGO, 1921 TO 1928

When the spread was large, changes in top prices were more effective than changes in average prices

the net change in the average price for the six market days directly preceding the price change was a decline of 5 cents or more; periods of rising prices were those in which the net change was an advance of 5 cents or more.

Straight lines fitted to the data for the two periods showed that price changes were about equally effective on later receipts both times (table 42

TABLE 42. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, UPON RECEIPTS ON TUESDAY, WEDNESDAY, AND THURSDAY, DURING PERIODS OF FALLING AND OF RISING PRICES, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Tuesday	Wednesday	Thursday
	Per cent change in receipts		
Prices falling	2.63	4.28	6.01
Prices rising	2.61	5.23	6.01
Advances during rising prices and declines during falling prices.	2.38	3.90	5.27
Advances during falling prices and declines during rising prices.	3.18.	5.90	7.61

and figure 60). When prices were falling, a 5-cent change in the price from Saturday to Monday affected Thursday's receipts 6.01 per cent. When prices were rising, the same change affected Thursday's receipts by exactly the same percentage.

By fitting a straight line to the percentage changes in Thursday's receipts when the price advanced following rising prices and declined

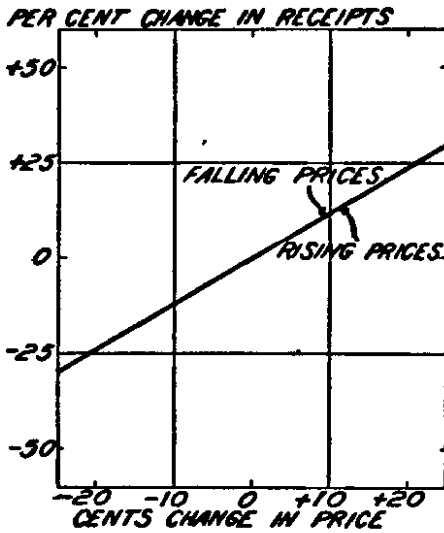


FIGURE 60. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON THURSDAY'S RECEIPTS DURING PERIODS OF FALLING AND OF RISING PRICES, CHICAGO, 1921 TO 1928

Price changes were equally effective in stimulating and in retarding the movement of hogs to market during periods of falling and periods of rising prices

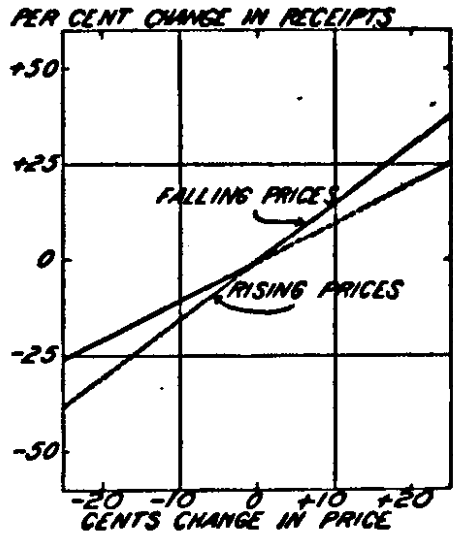


FIGURE 61. RELATIVE EFFECT OF ADVANCES AND DECLINES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON THURSDAY'S RECEIPTS DURING PERIODS OF FALLING AND OF RISING PRICES, CHICAGO, 1921 TO 1928

Price advances were more effective in stimulating market movement during periods of falling prices than during periods of rising prices. Price declines were more effective during periods of rising prices

following falling prices, and another when the price advanced following falling prices and declined following rising prices, significant results were obtained (table 42 and figure 61). When the price changed in the direction opposite to that of the trend in prices at the time, the effect on later receipts was greater than when it changed in the same direction.

A decline in price retarded market movement more in a period of rising prices than in a period of falling prices. A rise in the price stimulated the movement more in a period of falling prices than in a period of rising prices. A change in the price directly opposite to the trend of prices at the time was most effective.

In a period of rising prices, an advance of 5 cents in the price from Saturday to Monday increased receipts on Thursday 5.27 per cent while a decline of 5 cents decreased them 7.61 per cent. In a period of falling prices, a decline of 5 cents in the price from Saturday to Monday decreased receipts on Thursday 5.27 per cent while an advance of 5 cents increased them 7.61 per cent.

FOLLOWING PRICE CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION

On the average, regardless of what happened to the price of hogs on preceding days, advances from one day to the next stimulated later receipts, and declines retarded the movement.

Whether successive advances or declines are more effective than single changes in the price, is important. When the price advances two, three, four, or more days in succession, are receipts stimulated more than when it advances after a decline on the preceding day?

During the period from 1921 to 1928, when the average price of hogs at Chicago advanced 25 cents from Saturday to Monday, receipts on Thursday were increased by 30 per cent (figure 40, page 47). When this advance followed a decline in the price from Friday to Saturday, the number of hogs received on Thursday was increased by 33 per cent (figure 62). When the advance followed an advance on the preceding day, Thursday's receipts were increased by 66 per cent (figure 63).

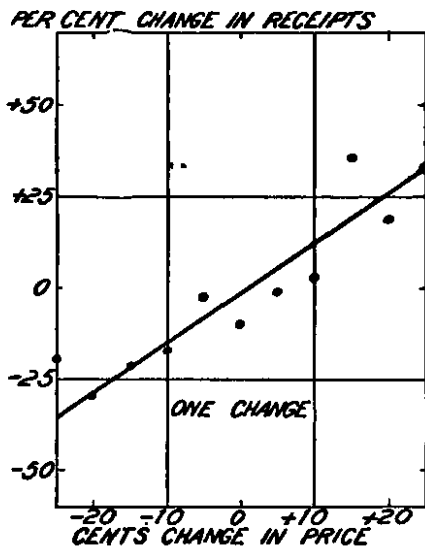


FIGURE 62. EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING CHANGES IN THE OPPOSITE DIRECTION FROM FRIDAY TO SATURDAY, ON THURSDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

When the price declined from Friday to Saturday, an advance of 25 cents from Saturday to Monday was followed by an increase of 33 per cent in Thursday's receipts

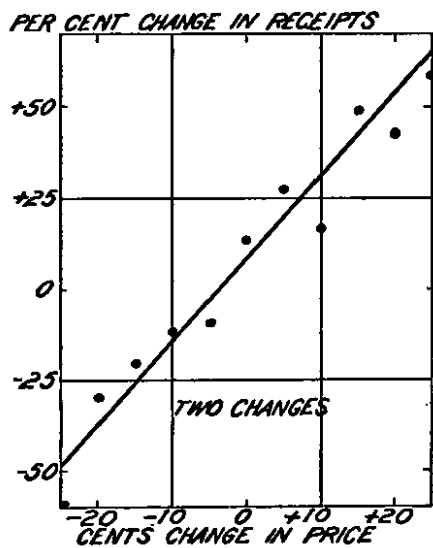


FIGURE 63. EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING CHANGES IN THE SAME DIRECTION FROM FRIDAY TO SATURDAY, ON THURSDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

When the price advanced from Friday to Saturday, an advance of 25 cents from Saturday to Monday was followed by an increase of 66 per cent in Thursday's receipts

A comparison of the relative effects of changes in the price from each day of the week to the next, following both opposite and similar changes (in direction only) in the price on the preceding day, is shown in table 43. With the exception of price changes from Friday to Saturday, receipts of hogs were stimulated more when the price advanced two days in succession than when the advance followed a decline, and were retarded more when the price declined two days in succession than when the decline followed an advance.

TABLE 43. RELATIVE EFFECT OF CHANGES IN THE PRICE OF HOGS FROM DAY TO DAY ON THE RECEIPTS ONE, TWO, AND THREE DAYS LATER, FOLLOWING PRICE CHANGES ON THE PRECEDING DAY IN THE SAME AND IN THE OPPOSITE DIRECTION, CHICAGO, 1921 TO 1928

With a change of 5 cents in the average price	One day later	Two days later	Three days later
	Per cent change in receipts		
Saturday to Monday:			
Following opposite price changes.....	2.87	5.03	6.84
Following similar price changes.....	2.73	7.74	10.60
Monday to Tuesday:			
Following opposite price changes.....	0.70	0.38	5.44
Following similar price changes.....	3.69	7.04	8.10
Tuesday to Wednesday:			
Following opposite price changes.....	0.96	2.42	7.10
Following similar price changes.....	2.39	7.96	12.11
Wednesday to Thursday:			
Following opposite price changes.....	-0.99	2.47	3.18
Following similar price changes.....	1.60	6.45	8.90
Thursday to Friday:			
Following opposite price changes.....	-4.07	1.78	5.91
Following similar price changes.....	1.29	5.46	7.33
Friday to Saturday:			
Following opposite price changes.....	5.36	10.18	7.83
Following similar price changes.....	-3.41	-1.60	-0.23

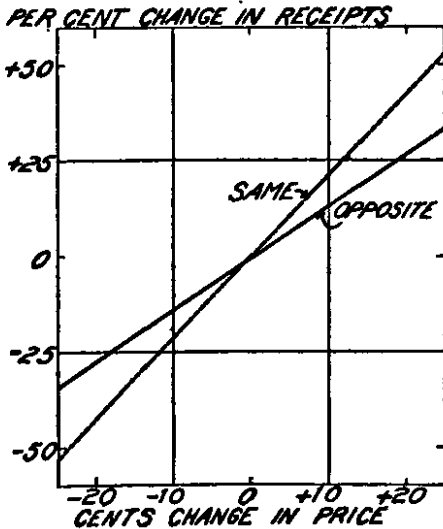


FIGURE 64. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION FROM FRIDAY TO SATURDAY, ON THURSDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday increased Thursday's receipts 19 per cent more when it followed an advance from Friday to Saturday than when it followed a decline

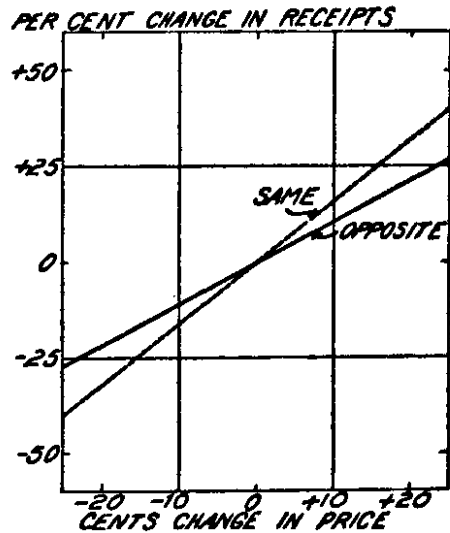


FIGURE 65. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM MONDAY TO TUESDAY FOLLOWING CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION FROM SATURDAY TO MONDAY, ON FRIDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Monday to Tuesday increased Friday's receipts 13 per cent more when it followed an advance from Saturday to Monday than when it followed a decline

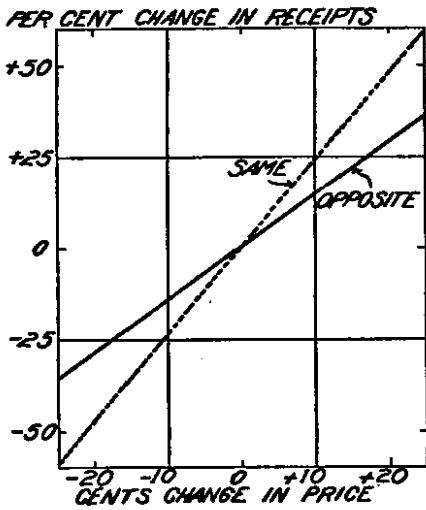


FIGURE 66. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM TUESDAY TO WEDNESDAY FOLLOWING CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION FROM MONDAY TO TUESDAY, ON SATURDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Tuesday to Wednesday increased Saturday's receipts 24 per cent more when it followed an advance from Monday to Tuesday than when it followed a decline

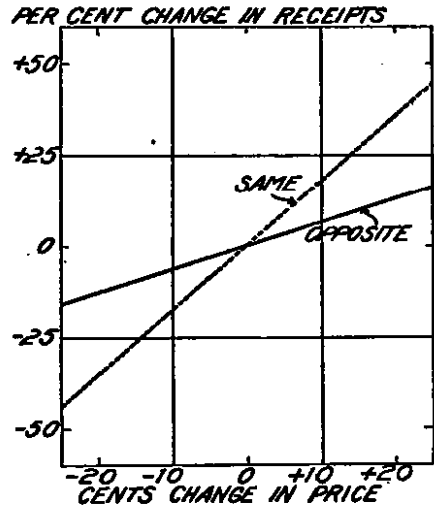


FIGURE 67. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM WEDNESDAY TO THURSDAY FOLLOWING CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION FROM TUESDAY TO WEDNESDAY, ON MONDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Wednesday to Thursday increased Monday's receipts 28 per cent more when it followed an advance from Tuesday to Wednesday than when it followed a decline

A change of 5 cents in the price from Tuesday to Wednesday following a change in the opposite direction from Monday to Tuesday, affected Thursday's receipts by 0.96 per cent, Friday's by 2.42 per cent, and Saturday's by 7.10 per cent. A change following a change in the same direction affected receipts by 2.29, 7.96, and 12.11 per cent, respectively, on the succeeding days.

Comparisons of the relative effects of changes in price each day of the week following changes in the same and in the opposite direction on the preceding day, upon receipts three days later, are shown in figures 64 to 69. Successive advances stimulated, and successive declines retarded, the movement of hogs to Chicago more than did single price changes in either direction.

Whereas two successive price changes in the same direction were more effective than one, three or more were less effective than either two or one (table 44 and figure 71). When the price advanced 25 cents from Saturday to Monday following an advance from Friday to Saturday, receipts on Thursday were increased 53 per cent. When the price advanced 25 cents following advances for two or more days, Thursday's receipts were increased only 26 per cent, or less than half as much.

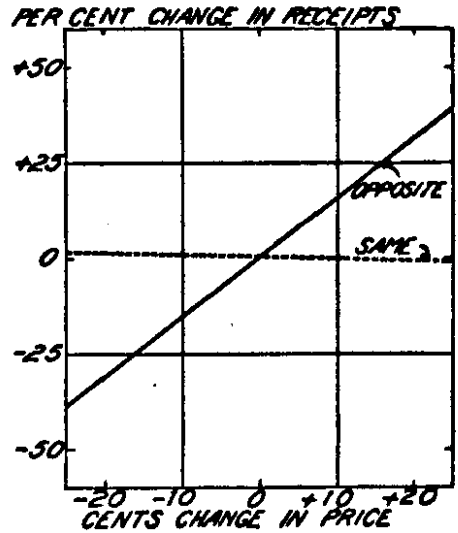
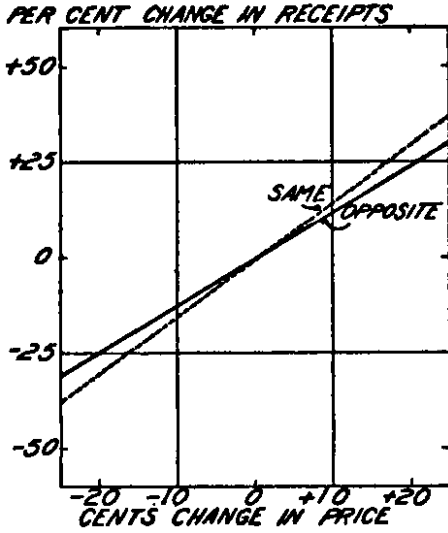


FIGURE 68. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM THURSDAY TO FRIDAY FOLLOWING CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION FROM WEDNESDAY TO THURSDAY, ON TUESDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Thursday to Friday increased Tuesday's receipts 7 per cent more when it followed an advance from Wednesday to Thursday than when it followed a decline

FIGURE 69. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM FRIDAY TO SATURDAY FOLLOWING CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION FROM THURSDAY TO FRIDAY, ON WEDNESDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Friday to Saturday increased Wednesday's receipts 40 per cent more when it followed a decline from Thursday to Friday than when it followed an advance

TABLE 44. RELATIVE EFFECT OF CHANGES IN THE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING VARIOUS CHANGES ON PRECEDING DAYS, UPON RECEIPTS IN THE FOLLOWING WEEK, CHICAGO, 1921 TO 1928

With a change of 5 cents in the average price from Saturday to Monday	Tuesday	Wednes- day	Thurs- day	Friday	Saturday	Monday
	Per cent change in receipts					
Following changes in the price from Friday to Saturday in the opposite direction.....	2.87	5.03	6.84	3.75	2.34	4.12
Following changes in the price from Friday to Saturday in the same direction.....	2.73	7.74	10.60	8.96	8.67	9.20
Following changes in the price for two or more days in the same direction.....	4.88	5.26	5.11	4.45	2.38	3.42
Regardless of changes in the price on preceding days.....	2.08	4.39	5.63	3.44	1.80	3.10

Apparently, advancing prices for several days in succession lead shippers to hold hogs from the market in the hope of getting still higher prices. An advance in the price following a decline stimulates receipts. An advance in the price following an advance is even more stimulating. An advance following several other advances is not so effective, although it is still a stimulant.

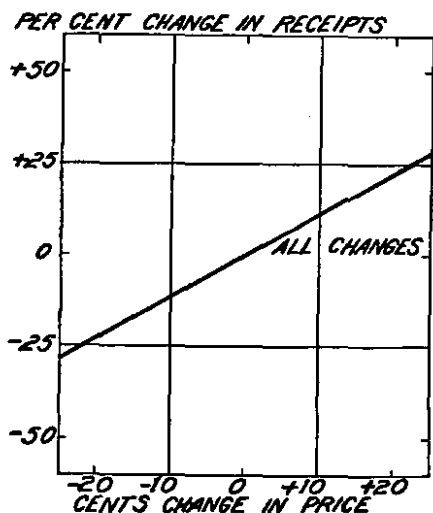


FIGURE 70. EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY REGARDLESS OF CHANGES ON THE PRECEDING DAYS, ON THURSDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday was followed by an increase of 28 per cent in Thursday's receipts

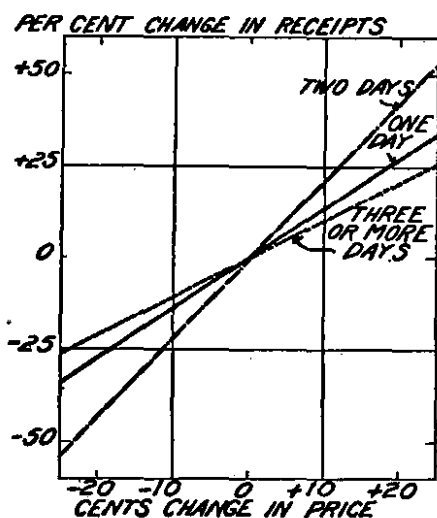


FIGURE 71. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY WHEN THESE CHANGES WERE IN THE SAME DIRECTION ONE, TWO, OR THREE OR MORE DAYS, ON THURSDAY'S RECEIPTS, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday increased Thursday's receipts 34 per cent if it was preceded by a decline, 53 per cent if it was preceded by a single advance, and 26 per cent if it was preceded by two or more advances

A change of 5 cents in price from Saturday to Monday, regardless of changes on preceding days, affected Thursday's receipts by 5.63 per cent. A change of 5 cents following a change from Friday to Saturday in the opposite direction, affected receipts on Thursday by 6.84 per cent. A 5-cent change following a change from Friday to Saturday in the same direction, affected Thursday's receipts by 10.60 per cent. Receipts on Thursday were affected by 5.11 per cent with a 5-cent change in the price from Saturday to Monday following two or more changes in the same direction on the days immediately preceding.

A comparison of the relative effects of various changes in price from Saturday to Monday, upon receipts of hogs on each of the six following market days, is shown in figure 72. When the price advanced 40 cents, receipts on Tuesday were increased by 17 per cent, on Wednesday by 35 per cent, on Thursday by 45 per cent, on Friday by 28 per cent, on Saturday by 14 per cent, and on Monday by 25 per cent.

Evidences of undulatory or cyclical movements, wave-like in character, are apparent. Of course a definite periodicity, such as seasonal variations possess, is lacking. Definite periodicity occurs only where the major influence affecting fluctuations is predominantly either one or sev-

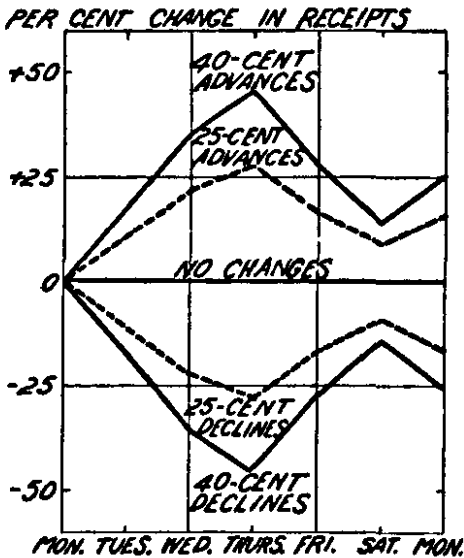


FIGURE 72. RELATIVE EFFECT OF VARIOUS CHANGES IN THE PRICE OF HOGS FROM SATURDAY TO MONDAY ON SUBSEQUENT RECEIPTS, CHICAGO, 1921 TO 1928

Advances in the price stimulated the movement of hogs to market; the peak was reached three days later. Declines retarded the movement; the trough came three days later

hogs from Saturday to Monday following changes from Friday to Saturday in the same and in the opposite direction, upon receipts on each of the six following market days, exemplifies the influence of successive changes in the price on fluctuations in daily receipts (figure 73). The range of fluctuations in receipts was greatly increased by two consecutive price changes in the same direction. The timing of maximum and minimum responses was unaltered.

The percentage changes in receipts from Monday to Thursday following different combinations of price changes from Saturday to Monday, from Monday to Tuesday, and from Tuesday to Wednesday, were calculated (table 45). Changes of 5 cents or less in the price were considered

eral highly correlated influences. In the case of the effect of price changes on later receipts, as has been shown, the degree of effectiveness is varied. Changes in the price on preceding days, the general trend of prices, the season of the year, the stage of the hog cycle, and other factors, exert an influence.

"Average" relationships, which assume that the influence of other factors is nullified, reflect the tendencies toward periodic vibrations in the number of hogs marketed in response to changes in the price on preceding days.

A comparison of the relative effect of changes in the price of

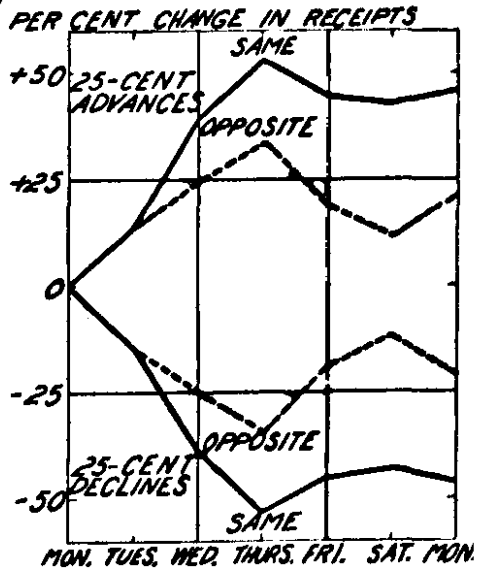


FIGURE 73. RELATIVE EFFECT OF ADVANCES AND DECLINES OF 25 CENTS IN THE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION FROM FRIDAY TO SATURDAY, ON SUBSEQUENT RECEIPTS, CHICAGO, 1921 TO 1928

An advance in the price following another advance stimulated the movement of hogs to market much more than did an advance following a decline. A decline following a decline retarded the movement more than did a decline following an advance

TABLE 45. EFFECT OF DIFFERENT COMBINATIONS OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, FROM MONDAY TO TUESDAY, AND FROM TUESDAY TO WEDNESDAY, ON THE CHANGE IN RECEIPTS FROM MONDAY TO THURSDAY, CHICAGO, 1921 TO 1928

Saturday to Monday	Monday to Tuesday	Tuesday to Wednesday	Receipts on Thursday in per cent of those on Monday	Saturday to Monday	Monday to Tuesday	Tuesday to Wednesday	Receipts on Thursday in per cent of those on Monday	Saturday to Monday	Monday to Tuesday	Tuesday to Wednesday	Receipts on Thursday in per cent of those on Monday
Down.....	Down.....	Down....	50	Down.....	Down.....	Stationary..	52	Down.....	Down.....	Up.....	54
Down.....	Stationary..	Down....	62	Down.....	Stationary..	Stationary..	54	Down.....	Stationary..	Up.....	53
Down.....	Up.....	Down....	54	Down.....	Up.....	Stationary..	58	Down.....	Up.....	Up.....	55
Stationary..	Down.....	Down....	67	Stationary..	Down.....	Stationary..	76	Stationary..	Down.....	Up.....	71
Stationary..	Stationary..	Down....	69	Stationary..	Stationary..	Stationary..	70	Stationary..	Stationary..	Up.....	68
Stationary..	Up.....	Down....	74	Stationary..	Up.....	Stationary..	70	Stationary..	Up.....	Up.....	69
Up.....	Down.....	Down....	91	Up.....	Down.....	Stationary..	88	Up.....	Down.....	Up.....	87
Up.....	Stationary..	Down....	93	Up.....	Stationary..	Stationary..	88	Up.....	Stationary..	Up.....	69
Up.....	Up.....	Down....	93	Up.....	Up.....	Stationary..	78	Up.....	Up.....	Up.....	81

stationary movements. Advances of from 5 to 20 cents and declines of the same amounts were taken as measures of upward and downward movements in prices.

When the price declined from Saturday to Monday, from Monday to Tuesday, and from Tuesday to Wednesday, receipts on Thursday were 50 per cent of Monday's receipts. When the price advanced from Saturday to Monday and from Monday to Tuesday, but declined from Tuesday to Wednesday, Thursday's receipts were 93 per cent of Monday's. Thursday's receipts were 86 per cent greater under the latter conditions than under the former.

EFFECT OF DAILY PRICE CHANGES ON RESHIPMENTS

Advances in the price of hogs greatly stimulated later receipts, while declines retarded the movement. Accordingly, price served as an important regulator of the rate at which hogs were marketed at Chicago.

A large number of the hogs shipped to Chicago were reshipped, as live hogs, to other markets. The actual number of reshipments varied with the day of the week, the season of the year, the phase of the hog-price cycle, and other factors.

The effect of changes in the price of hogs on the rate of reshipment was, of course, dependent partly on changes in the price at Chicago and partly on changes at the other markets to which the hogs were consigned. Price differences between the markets, rather than price changes at either Chicago or the other markets, were probably the controlling factors of most importance.

Since price data comparable to those at Chicago were not available for other markets, only the effect of changes in the price at Chicago on reshipments could be measured. The proportion of the hogs received at the yards which was reshipped, was taken as a measure of variances in the amount of reshipments. The conversion of the actual numbers to this basis partly removed the influence of season and cycle, and took account of the fact that the actual number reshipped tended to fluctuate with the number received.

METHOD OF ANALYSIS

The average price of hogs declined 40 cents from Saturday to Monday twice during the eight-year period from 1921 to 1928 (table 46). The total number of hogs received on Monday following those declines was 134,300, on Tuesday 63,400, on Wednesday 40,400, and on Thursday 44,300. The numbers reshipped on those days were 23,900, 13,400, 13,100, and 12,500.

The percentage of the number of hogs received on Monday which was reshipped on the same day, following the 40-cent declines, was 17.8 (table 47). The percentage on Tuesday was 21.1, on Wednesday 32.4, and on Thursday 28.2. The percentage of Monday's receipts which was reshipped when the price advanced 40 cents from Saturday to Monday was 37.9. Reshipments on Tuesday were 23.8 per cent of Tuesday's receipts, those on Wednesday were 35 per cent of Wednesday's receipts, and those on Thursday were 22.4 per cent of Thursday's receipts.

TABLE 46. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO THE TOTAL NUMBER RECEIVED AND RESHIPPED ON EACH OF THE THREE SUCCEEDING DAYS, CHICAGO, 1921 TO 1928

Change in average price from Saturday to Monday	Frequency	Monday	Tuesday	Wednesday	Thursday	Monday	Tuesday	Wednesday	Thursday
		Total daily receipts (hundreds)				Total daily reshipments (hundreds)			
(Cents)									
-40	2	1,343	634	404	443	239	134	131	125
-35	5	2,891	2,101	1,052	1,438	635	626	339	362
-30	9	5,287	3,075	1,910	2,792	1,130	910	508	682
-25	10	5,875	3,653	1,771	3,036	1,397	1,092	609	884
-20	22	14,060	7,447	4,662	6,731	3,027	2,107	1,217	1,610
-15	28	15,904	8,936	6,307	8,672	3,203	2,251	1,417	1,901
-10	36	20,604	11,552	7,880	12,070	4,716	3,079	2,093	2,849
-5	38	19,521	12,366	7,464	12,834	4,461	3,003	1,932	2,864
0	27	13,761	7,867	5,561	9,269	3,224	2,070	1,303	1,767
+5	30	14,248	9,381	5,996	10,617	3,493	2,330	1,608	2,254
+10	40	18,677	11,508	8,476	13,987	4,704	2,977	1,962	2,981
+15	42	17,906	13,519	9,444	16,946	4,410	3,160	1,998	3,512
+20	27	10,894	7,474	5,543	8,868	2,977	1,857	1,278	2,107
+25	20	6,773	4,960	3,686	6,049	1,661	1,036	696	1,108
+30	11	4,202	2,381	1,917	3,177	1,257	775	446	810
+35	6	2,514	1,571	1,445	2,116	732	374	301	477
+40	2	784	660	409	826	297	157	143	185

TABLE 47. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO DAILY RESHIPMENTS, IN PERCENTAGE OF RECEIPTS ON MONDAY, TUESDAY, WEDNESDAY, AND THURSDAY, CHICAGO, 1921 TO 1928

Change in average price from Saturday to Monday	Frequency	Monday	Tuesday	Wednesday	Thursday	Monday	Tuesday	Wednesday	Thursday
		Daily reshipments, in per cent of receipts				Daily reshipments, in per cent of receipts (normal = 100)			
(Cents)									
-40	2	17.8	21.1	32.4	28.2	74	81	132	125
-35	5	22.0	30.0	32.2	25.2	92	116	131	112
-30	9	21.2	29.8	26.6	24.4	89	115	108	108
-25	10	23.8	29.9	34.4	29.1	100	115	140	129
-20	22	21.5	28.3	26.1	23.9	90	109	106	106
-15	28	20.2	25.1	22.5	21.9	85	97	91	97
-10	36	23.3	27.0	26.7	24.1	97	104	109	107
-5	38	23.1	24.5	26.0	22.5	97	95	106	100
0	27	23.7	26.8	24.0	20.0	99	103	98	89
+5	30	24.5	24.8	26.8	21.2	103	96	109	94
+10	40	25.1	25.7	23.3	21.4	105	99	95	95
+15	42	24.7	23.3	21.3	20.9	103	90	87	93
+20	27	27.4	24.5	23.1	23.4	115	95	94	104
+25	20	24.5	20.9	18.9	18.3	103	81	77	81
+30	11	30.1	32.4	22.8	26.1	126	125	93	116
+35	6	30.2	24.7	21.8	23.8	126	95	89	106
+40	2	37.9	23.8	35.0	22.4	159	92	142	100

The average proportion of the number of hogs received which was reshipped during the entire period was 23.9 per cent on Monday, 25.9 per cent on Tuesday, 24.6 per cent on Wednesday, and 22.5 per cent on Thursday. These average percentages were considered normal for the respective days. In order to make the percentages in table 47 comparable for all days, they were divided by these normals. The results appear in the last four columns of table 47. On this basis, when the price declined 40 cents from Saturday to Monday the number of hogs reshipped from Chicago to other markets on Monday was 74 per cent of the normally expected number. When the price advanced 40 cents, the percentage reshipped was 159. Or, in other words, reshipments of hogs on Mon-

day were 26 per cent below normal when the price declined 40 cents from Saturday to Monday, and 59 per cent above normal when the price advanced 40 cents (table 48).

TABLE 48. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO THE PERCENTAGE CHANGES IN RECEIPTS RESHIPED ON MONDAY, TUESDAY, WEDNESDAY, AND THURSDAY, CHICAGO, 1921 TO 1928

Change in average price from Saturday to Monday (Cents)	Frequency	Monday	Tuesday	Wednesday	Thursday
		Per cent change in receipts reshipped			
-40	2	-26	-19	+32	+25
-35	5	-8	+16	+31	+12
-30	9	-11	+15	+8	+8
-25	10	0	+15	+40	+29
-20	22	-10	+9	+6	+6
-15	28	-15	-3	-9	-3
-10	36	-3	+4	+9	+7
-5	38	-3	-5	+6	0
0	27	-1	+3	-2	-11
+5	30	+3	-4	+9	-6
+10	40	+5	-1	-5	-5
+15	42	+3	-10	-13	-7
+20	27	+15	-5	-6	+4
+25	20	+3	-19	-23	-19
+30	11	+26	+25	-7	+16
+35	6	+26	-5	-11	+6
+40	2	+59	-8	+42	0

Straight lines were fitted to these percentages by the method of least squares, to measure average relationships (figures 74 to 77). Each per-

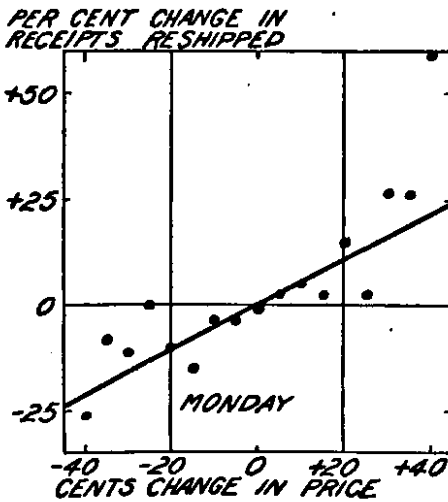


FIGURE 74. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN THE RECEIPTS RESHIPED ON MONDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday was followed by an increase of 13 per cent in the proportion of Monday's receipts that were reshipped

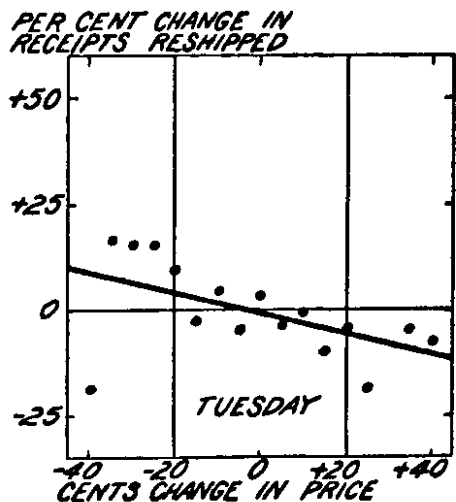


FIGURE 75. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN THE RECEIPTS RESHIPED ON TUESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday was followed by a decrease of 7 per cent in the proportion of Tuesday's receipts that were reshipped

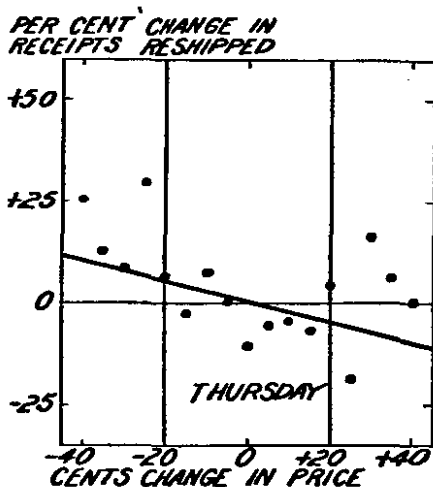
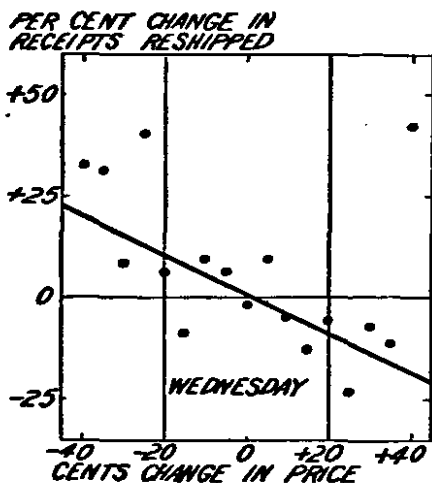


FIGURE 76. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN THE RECEIPTS RESHIPPED ON WEDNESDAY, CHICAGO, 1921 TO 1928

The percentage of Wednesday's receipts reshipped was 14 per cent greater when the price declined 30 cents than when it did not change

FIGURE 77. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO PERCENTAGE CHANGES IN THE RECEIPTS RESHIPPED ON THURSDAY, CHICAGO, 1921 TO 1928

The proportion of Thursday's receipts that were reshipped decreased when the price advanced from Saturday to Monday, and increased when the price declined

centage was weighted according to the frequency of the corresponding price change, in making the necessary calculations.

As in the case of receipts, a further assumption was made that no change in reshipments should correspond to no change in the price. Adjustments were made to meet this assumption.

DAILY VARIATIONS

Price changes from day to day affected the reshipment of hogs differently on different days of the week (table 49, and figures 78 and 79). An advance of 5 cents in the price from Saturday to Monday was followed by an increase of 2.56 per cent in the proportion of Monday's

TABLE 49. RELATIVE EFFECT OF DAILY CHANGES IN THE AVERAGE PRICE OF HOGS ON THE PERCENTAGE RESHIPPED TO OTHER MARKETS, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	On same day	One day later	Two days later	Three days later
	Per cent change in receipts reshipped			
Saturday to Monday.....	+2.56	-1.20	-2.36	-1.20
Monday to Tuesday.....	+6.79	+2.29	+0.59	-2.35
Tuesday to Wednesday.....	+4.63	+2.34	-0.75	-3.02
Wednesday to Thursday.....	+5.45	+1.45	-2.89	-0.13
Thursday to Friday.....	+3.63	+1.35	-0.50	-2.52
Friday to Saturday.....	+6.50	+2.91	+0.63	-0.06

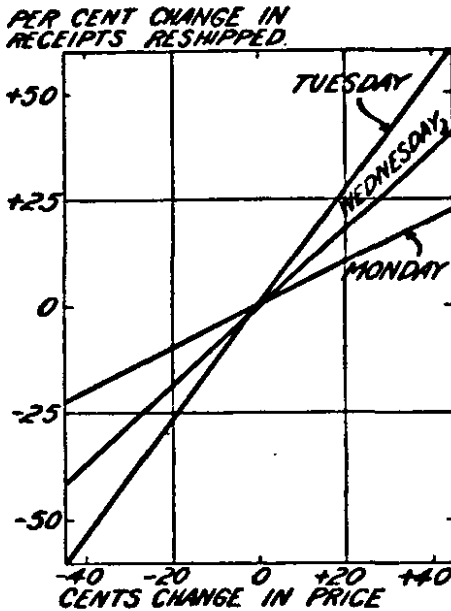


FIGURE 78. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, MONDAY TO TUESDAY, AND TUESDAY TO WEDNESDAY, ON RESHIPMENTS MONDAY, TUESDAY, AND WEDNESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from the preceding day was followed by an increase of 13 per cent in Monday's reshipments, 34 per cent in Tuesday's, and 23 per cent in Wednesday's

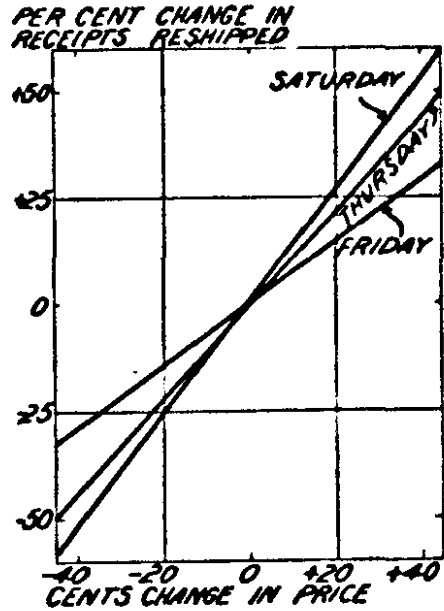


FIGURE 79. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM WEDNESDAY TO THURSDAY, THURSDAY TO FRIDAY, AND FRIDAY TO SATURDAY, ON RESHIPMENTS THURSDAY, FRIDAY, AND SATURDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from the preceding day was followed by an increase of 28 per cent in Thursday's reshipments, 11 per cent in Friday's, and 31 per cent in Saturday's

receipts that was reshipped on the same day to other markets. The same change from Monday to Tuesday was followed by an increase of 6.79 per cent in Tuesday's reshipments.

On all days of the week an advance in the price from the preceding day was followed by an increase in the proportion received at Chicago which was reshipped, and a decline in the price was followed by a decrease in the proportion reshipped.

In general, advances in price were followed by increases in the proportion of the number of hogs reshipped on the same day, increases in the proportion one day later, decreases in the proportion two days later, and decreases in the proportion three days later (table 49, and figures 80 to 85). Declines in the price were generally followed by the opposite conditions.

There were, however, a few exceptions. For example, advances in the price from Saturday to Monday were followed by decreases in the proportion reshipped on Tuesday. Also, price advances from Monday to Tuesday and from Friday to Saturday were followed by increases in the proportion reshipped two days later.

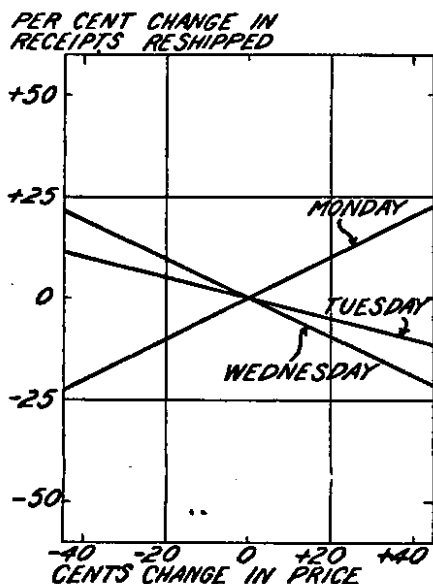


FIGURE 80. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, ON RESHIPMENTS MONDAY, TUESDAY, AND WEDNESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday was followed by an increase of 13 per cent in Monday's reshippments, a decrease of 6 per cent in Tuesday's, and a decrease of 12 per cent in Wednesday's

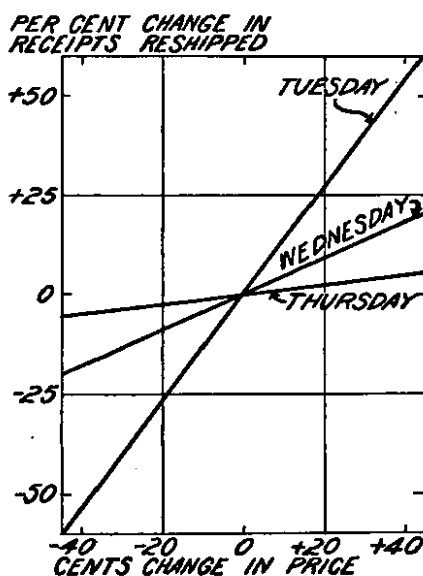


FIGURE 81. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM MONDAY TO TUESDAY, ON RESHIPMENTS TUESDAY, WEDNESDAY, AND THURSDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Monday to Tuesday was followed by an increase of 34 per cent in Tuesday's reshippments, 11 per cent in Wednesday's, and 3 per cent in Thursday's

The largest decrease in reshippments, following advances in the price three days before, was on Saturday. An advance of 5 cents in the price from Tuesday to Wednesday was followed by a 3-per-cent decrease in the proportion of hogs reshipped on Saturday. The smallest decrease in reshippments was on Wednesday, following advances in the price from Friday to Saturday.

On referring to table 35 (page 49), the fact is noted that reshippments in percentage of receipts tended to increase and decrease inversely with fluctuations in receipts. That is to say, the actual number of hogs reshipped tended to fluctuate with the number received but fluctuated less violently. Hence, when the number of hogs received was large, the percentage reshipped tended to be small; and when the number received was small, the percentage reshipped tended to be large.

Despite these tendencies, there is some evidence that variations in the demand for hogs in markets nearer the consuming centers are reflected in prices at Chicago. When increased numbers of hogs leave Chicago immediately following price advances at that market, the price situation in the markets to which the hogs are shipped must be improved more than that at Chicago.

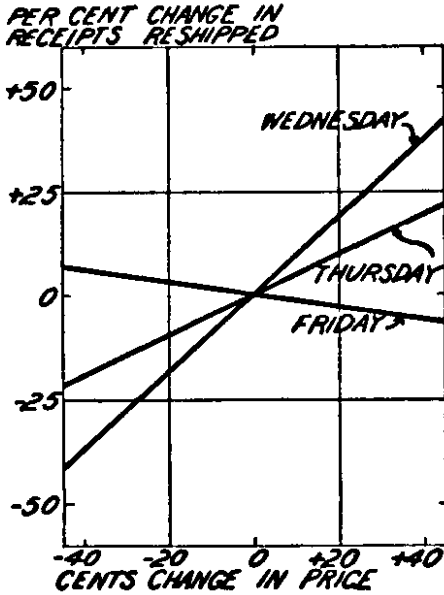


FIGURE 82. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM TUESDAY TO WEDNESDAY, ON RESHIPMENTS WEDNESDAY, THURSDAY, AND FRIDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Tuesday to Wednesday was followed by an increase of 23 per cent in Wednesday's reshippments, an increase of 12 per cent in Thursday's, and a decrease of 4 per cent in Friday's

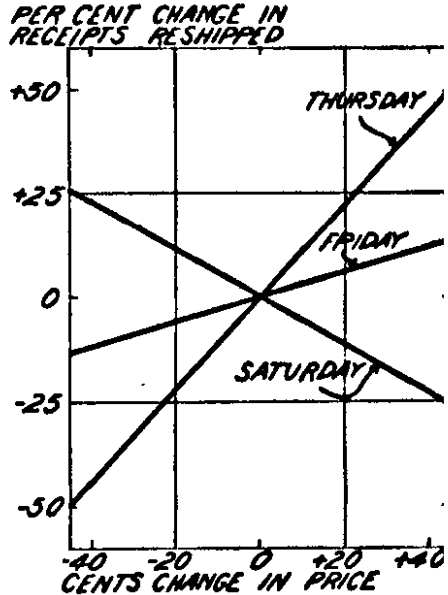


FIGURE 83. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM WEDNESDAY TO THURSDAY, ON RESHIPMENTS THURSDAY, FRIDAY, AND SATURDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Wednesday to Thursday was followed by an increase of 28 per cent in Thursday's reshippments, an increase of 7 per cent in Friday's, and a decrease of 14 per cent in Saturday's

RELATIVE EFFECT OF DAILY PRICE CHANGES ON RESHIPMENTS BEFORE AND AFTER THE WAR

During the pre-war period, from 1910 to 1913, an advance of 5 cents in the price of hogs from Saturday to Monday was associated with an increase of 7.19 per cent in the proportion of receipts reshipped on Monday (table 50 and figure 86). After the war, from 1921 to 1924, the corresponding percentage was 1.85.

Whereas, before the war, reshippments in percentage of receipts increased on Tuesday, Wednesday, and Thursday following advances in

TABLE 50. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON THE PERCENTAGE RESHIPED TO OTHER MARKETS BEFORE AND AFTER THE WAR, CHICAGO, 1910-1913 AND 1921-1924

With a change of 5 cents in price	Monday	Tuesday	Wednesday	Thursday
	Per cent change in receipts reshipped			
Before the war (1910-1913).....	+7.19	+2.69	+1.70	+0.36
After the war (1921-1924).....	+1.85	-2.28	-3.10	-1.71

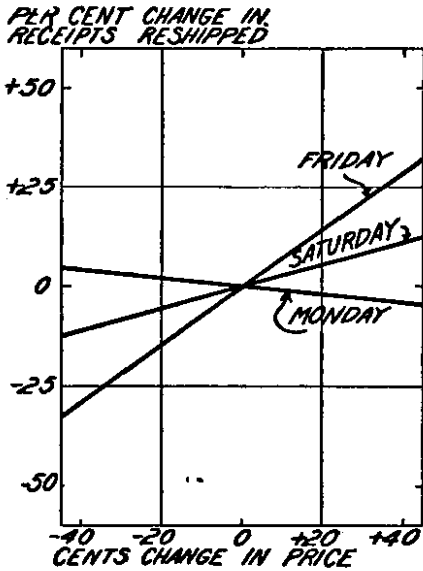


FIGURE 84. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM THURSDAY TO FRIDAY, ON RESHIPMENTS FRIDAY, SATURDAY, AND MONDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Thursday to Friday was followed by an increase of 18 per cent in Friday's reshipments, an increase of 7 per cent in Saturday's, and a decrease of 2 per cent in Monday's

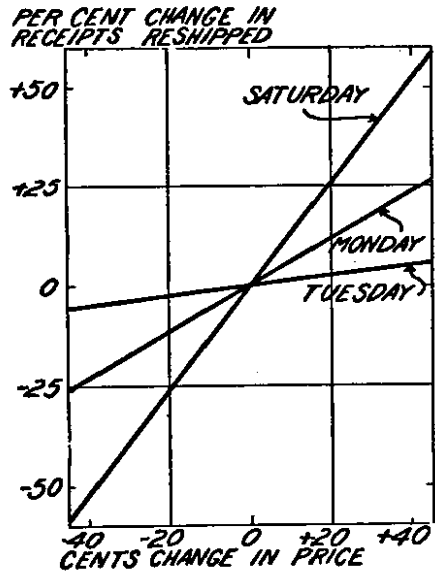


FIGURE 85. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM FRIDAY TO SATURDAY, ON RESHIPMENTS SATURDAY, MONDAY, AND TUESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Friday to Saturday was followed by an increase of 33 per cent in Saturday's reshipments, 14 per cent in Monday's, and 3 per cent in Tuesday's

the price of hogs from Saturday to Monday, they decreased with such price changes after the war. Before the war, the increases in reshipments following an advance of 5 cents in the price were 2.69 per cent on Tuesday, 1.70 per cent on Wednesday, and 0.56 per cent on Thursday. After the war, the decreases were 2.28, 3.10, and 1.71 per cent, respectively.

With larger increases in receipts three days following advances in the price before the war than after, it was to be expected that reshipments in percentage of receipts would decrease more in the earlier period. However, as a matter of fact, the percentage reshipped increased slightly, despite much larger receipts.

AT THE BOTTOM AND THE TOP OF THE CYCLE

When the price of hogs was low, as in the 1921-1924 period, an advance of 5 cents in the price from Saturday to Monday was followed by an increase of 1.85 per cent in the proportion reshipped on Monday (table 51 and figure 87). When prices were high, as in the period from 1925 to 1928, the percentage increase in reshipments following a 5-cent advance was 2.89.

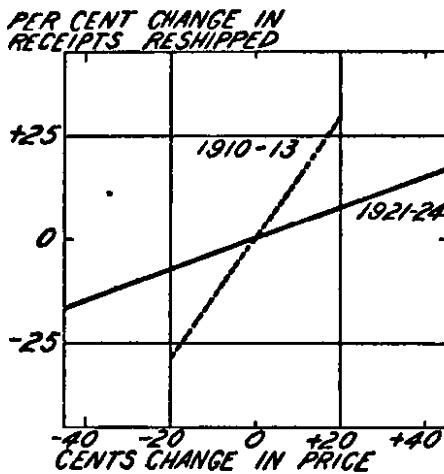


FIGURE 86. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON MONDAY'S RESHIPMENTS BEFORE AND AFTER THE WAR, CHICAGO, 1910 TO 1913 AND 1921 TO 1924

Changes in price affected reshippments more before the war than after

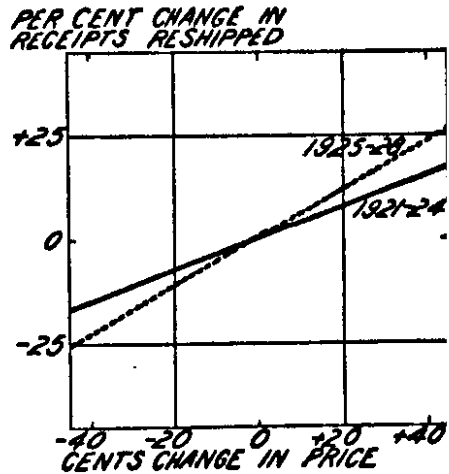


FIGURE 87. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON MONDAY'S RESHIPMENTS AT THE BOTTOM AND AT THE TOP OF THE HOG-PRICE CYCLE, CHICAGO 1921 TO 1924 AND 1925 TO 1928

Changes in price affected reshippments more at the top of the cycle than at the bottom

TABLE 51. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON THE PERCENTAGE RESHIPPIED TO OTHER MARKETS AT THE BOTTOM AND AT THE TOP OF THE HOG-PRICE CYCLE, CHICAGO, 1921-1924 AND 1925-1928

With a change of 5 cents in price	Monday	Tuesday	Wednesday	Thursday
	Per cent change in receipts reshipped			
Bottom of the cycle (1921-1924).....	+1.85	-2.28	-3.10	-1.71
Top of the cycle (1925-1928).....	+2.89	-0.56	-1.74	-0.91

Although the difference in the effect of price changes on later receipts at the bottom and the top of the hog cycle was not great, the corresponding changes in reshippments differed widely. Reshippments in percentage of receipts decreased much more with advances in the price at the bottom than at the top of the cycle.

When the price advanced 5 cents from Saturday to Monday at the top of the cycle, Tuesday's reshippments decreased 0.56 per cent, Wednesday's decreased 1.74 per cent, and Thursday's decreased 0.91 per cent. At the bottom of the cycle, the corresponding percentages were 2.28, 3.10, and 1.71.

Apparently there is more of a tendency to keep hogs at Chicago when the price advances at that market during a period of low prices than during a period of high prices. Conversely, there is more of a tendency to reship hogs to other markets following price advances at Chicago when the level of hog prices is high than when it is low.

DURING THE WINTER AND THE SUMMER MONTHS

During the winter months, an advance of 5 cents in the price of hogs from Saturday to Monday was followed by an increase of 1.31 per cent in the proportion reshipped on Monday (table 52 and figure 88). During the summer months the corresponding percentage was 3.81.

TABLE 52. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON THE PERCENTAGE RESHIPMENT TO OTHER MARKETS DURING THE WINTER AND THE SUMMER MONTHS, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Monday	Tuesday	Wednesday	Thursday
	Per cent change in receipts reshipped			
In winter months.....	+1.31	-3.32	-4.78	-3.04
In summer months.....	+3.81	+0.63	+0.92	+0.82

Advances of 5 cents in the price from Saturday to Monday in the winter were followed by decreases in the percentage of receipts reshipped on subsequent days — 3.32 per cent on Tuesday, 4.78 per cent on Wednesday, and 3.04 per cent on Thursday. In the summer, 5-cent advances were followed by increases of 0.63, 0.92, and 0.82 per cent, respectively.

As was the case in different phases of the hog cycle, there was more of a tendency to reship hogs to other markets following price advances at Chicago when prices were low than when they were high.

WHEN THE SPREAD BETWEEN TOP AND AVERAGE PRICES WAS LARGE AND WHEN IT WAS SMALL

When the spread between top and average prices of hogs was large, an advance of 5 cents in the price from Saturday to Monday was followed by an increase of 1 per cent in the number of hogs reshipped on Monday from Chicago to other markets (table 53 and figure 89). When the spread was small, the percentage was 3.07, three times as great.

Following advances of 5 cents in the price from Saturday to Monday when the spread was large, the proportion of Tuesday's receipts of hogs which was reshipped decreased 1.70 per cent, Wednesday's decreased 0.80 per cent, and Thursday's decreased 2.23 per cent. When the spread was small, the decreases were 2.15 per cent on Tuesday, 4.91 per cent on Wednesday, and 3.42 per cent on Thursday.

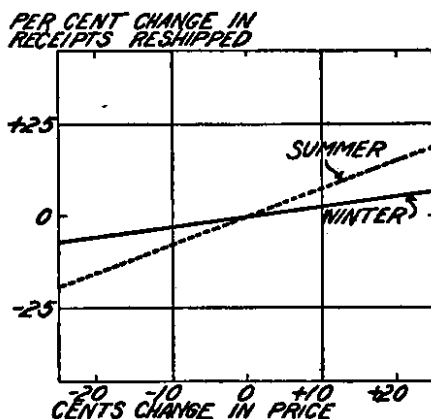


FIGURE 88. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON MONDAY'S RESHIPMENTS DURING THE WINTER AND THE SUMMER MONTHS, CHICAGO, 1921 TO 1928

Changes in price affected reshipments more during the summer than during the winter

TABLE 53. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON THE PERCENTAGE RESHIPPED TO OTHER MARKETS WHEN THE SPREAD BETWEEN TOP AND AVERAGE PRICES WAS LARGE AND WHEN IT WAS SMALL, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Monday	Tuesday	Wednesday	Thursday
	Per cent change in receipts reshipped			
Large spread.....	+1.00	-1.70	-0.80	-2.23
Small spread.....	+3.07	-2.15	-4.91	-3.62

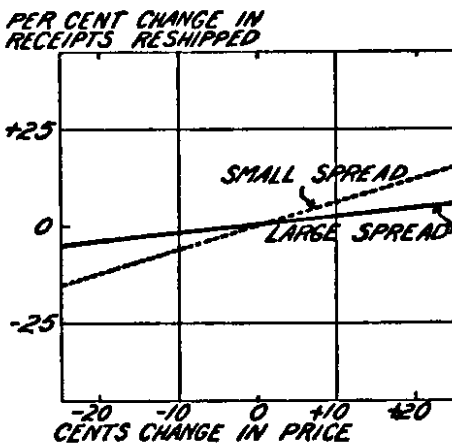


FIGURE 89. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY ON MONDAY'S RESHIPMENTS WHEN THE SPREAD BETWEEN THE TOP AND THE AVERAGE PRICES WAS LARGE AND WHEN IT WAS SMALL, CHICAGO, 1921 TO 1928

Changes in price affected reshipments more when the spread between the top and the average prices was small than when it was large

These results give further evidence of the tendency for reshipments of hogs from Chicago to decrease more with price advances during times when the supply is large and prices are low, than when the supply is small and prices are high.

FOLLOWING PRICE CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION

When the price of hogs advanced 5 cents from Saturday to Monday following a decline from Friday to Saturday, the proportion of Monday's receipts that was reshipped increased 1.11 per cent (table 54, and figures 90 and 91). When the 5-cent advance followed an advance in the price from Friday to Saturday (two successive changes in the same direction), the percentage reshipped on Monday increased 6.72 per cent. The increase was more than six times as great in the latter case as in the former.

TABLE 54. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION FROM FRIDAY TO SATURDAY, ON THE PERCENTAGE RESHIPPED TO OTHER MARKETS, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Monday	Tuesday	Wednesday	Thursday
	Per cent change in receipts reshipped			
Following opposite price changes.....	+1.11	-1.97	-3.77	-3.10
Following similar price changes.....	+6.72	-0.08	+1.02	+0.42

Advances in the price following declines on the preceding day were followed by larger decreases in the percentage of reshipments on later days than were advances which followed advances. Two successive price

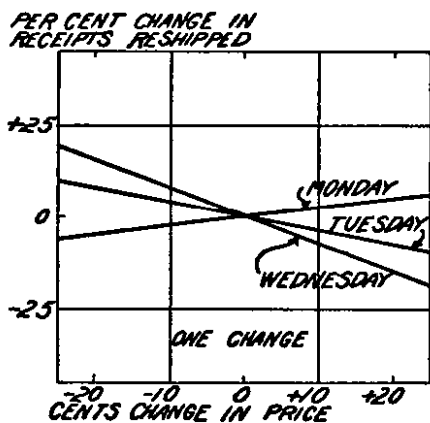


FIGURE 90. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING CHANGES IN THE OPPOSITE DIRECTION FROM FRIDAY TO SATURDAY, ON RESHIPMENTS MONDAY, TUESDAY, AND WEDNESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday following a decline from Friday to Saturday, was followed by an increase of 6 per cent in Monday's reshipments, a decrease of 10 per cent in Tuesday's, and a decrease of 19 per cent in Wednesday's

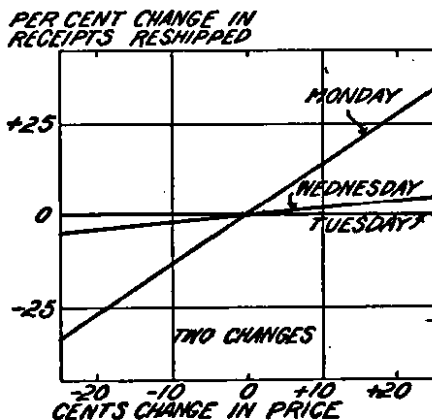


FIGURE 91. RELATIVE EFFECT OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING CHANGES IN THE SAME DIRECTION FROM FRIDAY TO SATURDAY, ON RESHIPMENTS MONDAY, TUESDAY, AND WEDNESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday following an advance from Friday to Saturday, was followed by an increase of 34 per cent in Monday's reshipments, no change in Tuesday's, and an increase of 5 per cent in Wednesday's

advances encouraged reshipment more than did an advance following a decline. When the price advanced 5 cents from Saturday to Monday following a decline from Friday to Saturday, Tuesday's reshipments decreased 1.97 per cent, Wednesday's 3.77 per cent, and Thursday's 3.10 per cent. When the advance followed another advance, Tuesday's reshipments decreased only 0.08 per cent, Wednesday's increased 1.02 per cent, and Thursday's increased 0.42 per cent.

Rising prices, of course, encourage the reshipment of hogs to other markets, for the mere ownership of any product at such times means a profit. The longer the time elapsing before the product is actually sold, the larger will be this profit. Hence the trend of prices is important in determining the relative profitableness of selling hogs at Chicago or of taking chances on reshipping them to other markets.

RELATION OF DAILY PRICE CHANGES TO SUBSEQUENT CHANGES IN THE PRICE

It has been found that when the price of hogs advanced from one day to the next at Chicago, the number of hogs received on later days of the week increased. Price declines were followed by reductions in the number of hogs received. The greatest effect was on receipts three days after the price change.

As a consequence of this effect of price changes on later receipts, it was to be expected that later movements in the price would be inversely related.

An advance in the price from one day to the next, resulting in increase receipts three days later, should be followed by price declines because of such increases in the supply. Also, declines in the price should be followed by advances, resulting from reductions in the supply.

In order to test the accuracy of the above statements and to determine the amount of such expected changes in the price, daily changes in the price of hogs at Chicago were studied in relation to subsequent changes in the price.

METHOD OF ANALYSIS

On the two occasions when the price of hogs declined 40 cents per hundredweight from Saturday to Monday, an additional decline of 40 cent from Monday to Tuesday followed (table 55). The average decline was 20 cents. From Tuesday to Wednesday the price advanced 10 cents, and from Wednesday to Thursday 40 cents. The average advances were 5 and 20 cents, respectively. Hence the net change in the price from Monday to Thursday was a 5-cent advance.

TABLE 55. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO CHANGES IN THE PRICE FROM MONDAY TO TUESDAY, FROM TUESDAY TO WEDNESDAY, FROM WEDNESDAY TO THURSDAY, AND FROM MONDAY TO THURSDAY, CHICAGO, 1921 TO 1928

Change in average price from Saturday to Monday (Cents)	Frequency	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Monday to Thursday
		Total change in price (cents)			Average change in price (cents)			
-40	2	- 40	+ 10	+ 40	-20.0	+ 3.0	+20.0	+ 5.0
-35	5	-125	+ 55	+ 80	-25.0	+11.0	+16.0	+ 2.0
-30	9	- 55	+ 80	+ 75	- 6.1	+ 8.9	+ 8.3	+11.1
-25	10	-105	+ 35	+ 55	-10.5	+ 3.5	+ 3.5	- 1.1
-20	22	- 55	+105	+185	- 2.5	+ 4.8	+ 8.4	+10.1
-15	28	-270	+ 95	+ 90	- 9.6	- 3.4	+ 3.2	- 9.6
-10	36	- 60	- 65	+110	- 1.7	- 1.8	+ 3.1	- 0.4
- 5	38	-100	+ 20	+ 40	- 2.6	+ 0.5	+ 1.1	- 1.0
0	27	- 25	- 35	- 45	- 0.9	- 1.3	- 1.7	- 3.9
+ 5	30	- 30	+115	+140	- 1.0	+ 3.8	+ 4.7	+ 7.5
+10	40	+ 50	-125	+ 30	+ 1.2	- 3.1	+ 0.8	- 1.1
+15	42	- 80	-145	-145	- 1.9	- 3.5	- 3.5	- 8.9
+20	27	- 85	-190	-190	- 3.1	- 7.0	- 7.0	-17.1
+25	20	- 55	+ 5	- 35	- 2.8	+ 0.2	- 1.8	- 4.4
+30	11	+135	+ 35	- 25	+12.3	+ 3.2	- 2.3	+13.2
+35	6	+ 10	- 55	+ 40	+ 1.7	- 9.2	+ 0.7	- 6.8
+40	2	+ 25	- 65	+ 10	+12.5	-32.5	+ 5.0	-15.0

An advance of 40 cents in the price of hogs from Saturday to Monday was followed by an average advance of 12.5 cents from Monday to Tuesday, a decline of 32.5 cents from Tuesday to Wednesday, and an advance of 5 cents from Wednesday to Thursday. The net change from Monday to Thursday was a decline of 15 cents.

Lines of *average* relationship were fitted to these changes in the price. Each change was weighted according to its frequency as given in the second column of table 55. The group averages, together with the fitted lines, are plotted in figures 92 to 95, inclusive. On the average, advances of 25 cents in the price of hogs from Saturday to Monday were followed

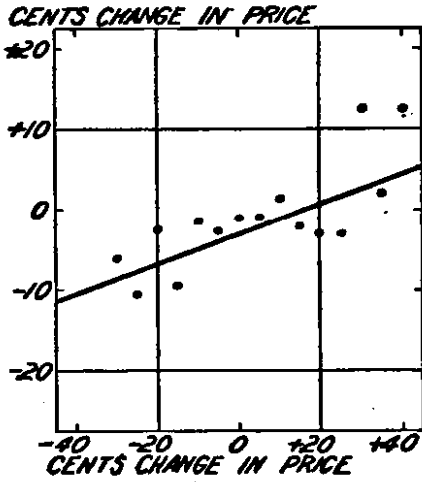


FIGURE 92. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO CHANGES FROM MONDAY TO TUESDAY, CHICAGO, 1921 TO 1928

On the average, a change of 5 cents in the price from Saturday to Monday was followed by a change of approximately 1 cent in the same direction from Monday to Tuesday

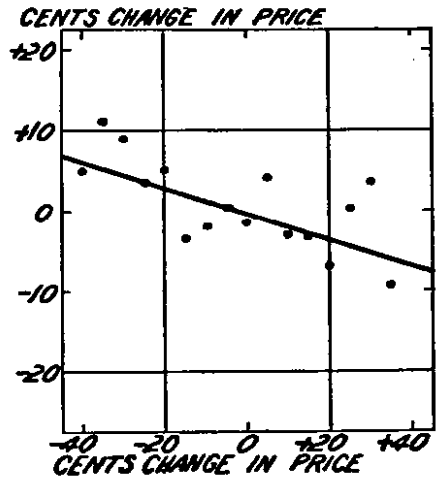


FIGURE 93. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO CHANGES FROM TUESDAY TO WEDNESDAY, CHICAGO, 1921 TO 1928

On the average, a change of 5 cents in the price from Saturday to Monday was followed by a change of 0.8 cent in the opposite direction from Tuesday to Wednesday

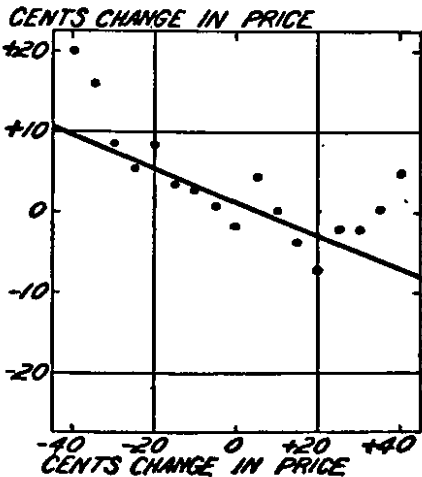


FIGURE 94. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO CHANGES FROM WEDNESDAY TO THURSDAY, CHICAGO, 1921 TO 1928

On the average, a change of 5 cents in the price from Saturday to Monday was followed by a change of 1 cent in the opposite direction from Wednesday to Thursday

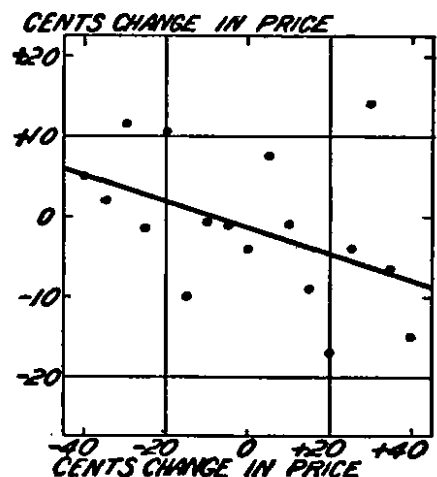


FIGURE 95. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO CHANGES FROM MONDAY TO THURSDAY, CHICAGO, 1921 TO 1928

On the average, a change of 5 cents in the price from Saturday to Monday was followed by a change of 0.8 cent in the opposite direction from Monday to Thursday

by prices about 2 cents higher on Tuesday than on Monday, 5 cents lower on Wednesday than on Tuesday, and 4 cents lower on Thursday than on Wednesday.

In order to facilitate a comparison of the slopes of different lines adjustments were made which focused all lines at a common point. It was assumed that no changes in the price were followed by no changes.

DAILY VARIATIONS

Just as changes in the price of hogs on different days of the week varied in their effect on later receipts and reshipments, subsequent changes in the price also differed. On some days, advances in the price were followed by further advances. On other days, the same advances were followed by declines.

A change of 5 cents in the price from Saturday to Monday was followed, on the average, by a change of 0.96 cent in the same direction from Monday to Tuesday (table 56). The same change in the price from Tuesday to Wednesday was followed by a change of 1.61 cents in the same direction from Wednesday to Thursday.

On all days of the week, changes in the price from one day to the next were followed by further changes in the same direction on the following

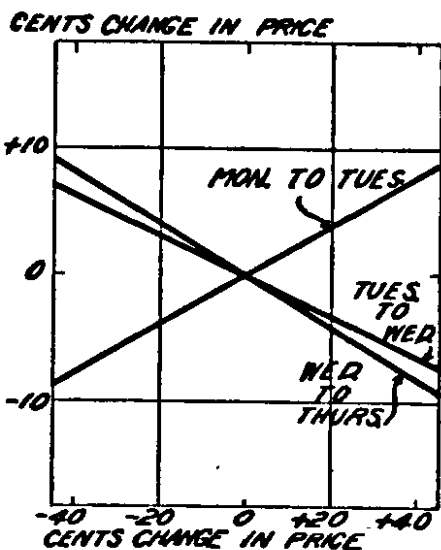


FIGURE 96. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY, TO CHANGES FROM MONDAY TO TUESDAY, TUESDAY TO WEDNESDAY, AND WEDNESDAY TO THURSDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents from Saturday to Monday was followed by an advance of 5 cents from Monday to Tuesday, a decline of 4 cents from Tuesday to Wednesday, and a decline of 5 cents from Wednesday to Thursday

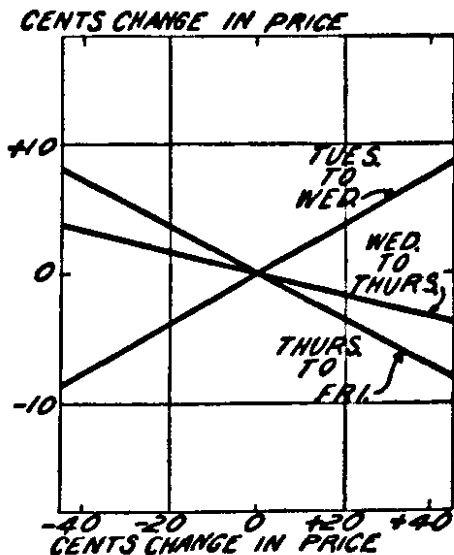


FIGURE 97. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM MONDAY TO TUESDAY, TO CHANGES FROM TUESDAY TO WEDNESDAY, WEDNESDAY TO THURSDAY, AND THURSDAY TO FRIDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents from Monday to Tuesday was followed by an advance of 5 cents from Tuesday to Wednesday, a decline of 8 cents from Wednesday to Thursday, and a decline of 4.5 cents from Thursday to Friday

TABLE 56. RELATION OF DAILY CHANGES IN THE AVERAGE PRICE OF HOGS TO SUBSEQUENT CHANGES IN THE PRICE, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Cents change in the price from			
	Same day to one day later	One day to two days later	Two days to three days later	Same day to three days later
Saturday to Monday.....	+0.96	-0.80	-1.02	-0.82
Monday to Tuesday.....	+0.96	-0.40	-0.89	-0.25
Tuesday to Wednesday.....	+1.61	-0.32	-0.39	+0.84
Wednesday to Thursday.....	+1.33	-0.73	-0.19	+0.45
Thursday to Friday.....	+0.71	+0.60	-0.35	+0.99
Friday to Saturday.....	+0.81	+0.88	-0.84	+0.61

day. These latter changes varied from 0.71 cent to 1.61 cents with each additional 5-cent change in the price.

The price changed in the opposite direction from the second to the third day following a given change in the price. This was true for all days of the week. For example, an advance in the price from Saturday to Monday was followed by a decline from Wednesday to Thursday,

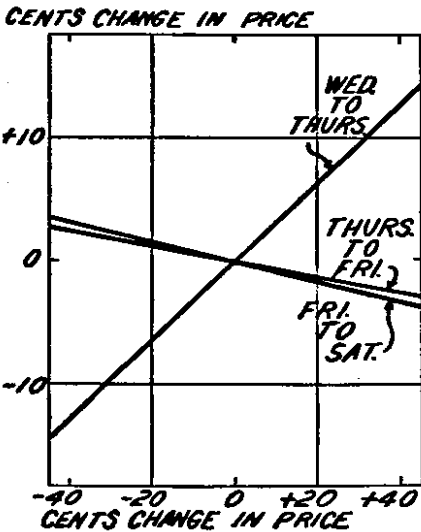


FIGURE 98. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM TUESDAY TO WEDNESDAY, TO CHANGES FROM WEDNESDAY TO THURSDAY, THURSDAY TO FRIDAY, AND FRIDAY TO SATURDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents from Tuesday to Wednesday was followed by an advance of 8 cents from Wednesday to Thursday, a decline of 2 cents from Thursday to Friday, and a decline of 2 cents from Friday to Saturday

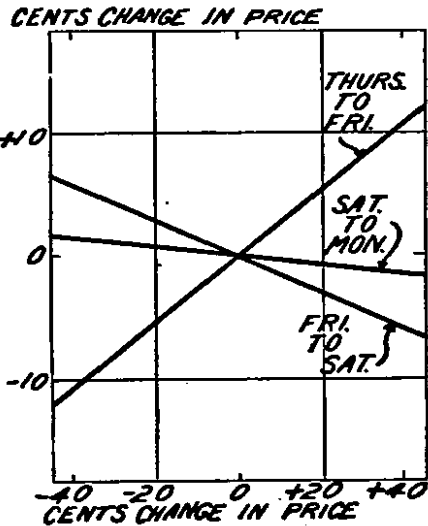


FIGURE 99. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM WEDNESDAY TO THURSDAY, TO CHANGES FROM THURSDAY TO FRIDAY, FRIDAY TO SATURDAY, AND SATURDAY TO MONDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents from Wednesday to Thursday was followed by an advance of 7 cents from Thursday to Friday, a decline of 4 cents from Friday to Saturday, and a decline of 1 cent from Saturday to Monday

and an advance from Wednesday to Thursday was followed by a decline from Saturday to Monday.

Comparisons of changes in the price of hogs from one day to the next, in relation to the average changes on subsequent days, are shown in figures 96 to 101. Advances in the price from Saturday to Monday and from Monday to Tuesday were followed by further advances or day later, declines two days later, and declines three days later. Advances from Tuesday to Wednesday and from Wednesday to Thursday were followed by large advances one day later, and small declines two and three days later. Advances from Thursday to Friday and from Friday to Saturday were followed by further advances the next two days and declines three days later.

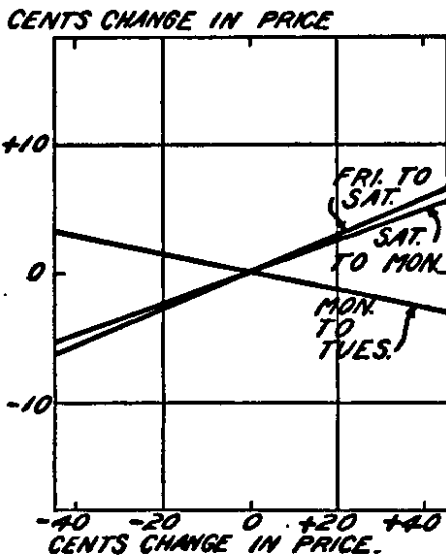


FIGURE 100. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM THURSDAY TO FRIDAY, TO CHANGES FROM FRIDAY TO SATURDAY, SATURDAY TO MONDAY, AND MONDAY TO TUESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents from Thursday to Friday was followed by an advance of 4 cents from Friday to Saturday, an advance of 3 cents from Saturday to Monday, and a decline of 2 cents from Monday to Tuesday

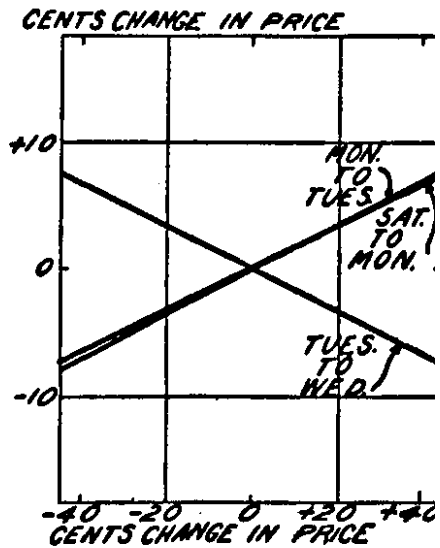


FIGURE 101. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM FRIDAY TO SATURDAY, TO CHANGES FROM SATURDAY TO MONDAY, MONDAY TO TUESDAY, AND TUESDAY TO WEDNESDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents from Friday to Saturday was followed by an advance of 4 cents from Saturday to Monday, an advance of 3 cents from Monday to Tuesday, and a decline of 4 cents from Tuesday to Wednesday

The net change in the price of hogs from the day of the price change to the third day following, when receipts were affected the most, is a measure of the effect of such changes in receipts on the price. A comparison of these net changes for each day of the week is made in table 56 and figures 102 and 103.

When the price of hogs advanced 25 cents from Saturday to Monday the number of hogs received at Chicago increased 28 per cent from Mon

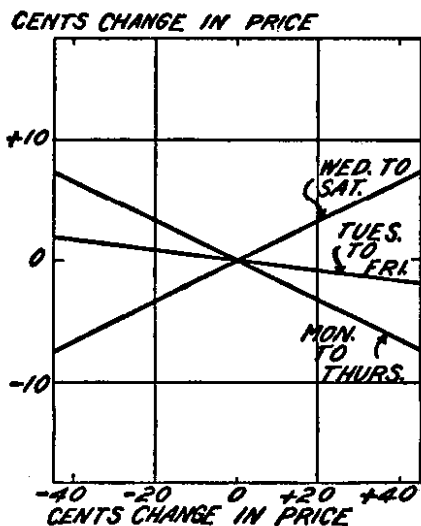


FIGURE 102. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY TO CHANGES FROM MONDAY TO THURSDAY, OF CHANGES FROM MONDAY TO TUESDAY TO CHANGES FROM TUESDAY TO FRIDAY, AND OF CHANGES FROM TUESDAY TO WEDNESDAY TO CHANGES FROM WEDNESDAY TO SATURDAY, CHICAGO, 1921 TO 1928

Advances in the price from Saturday to Monday and from Monday to Tuesday were followed by net price declines three days later. Advances from Tuesday to Wednesday were followed by further advances

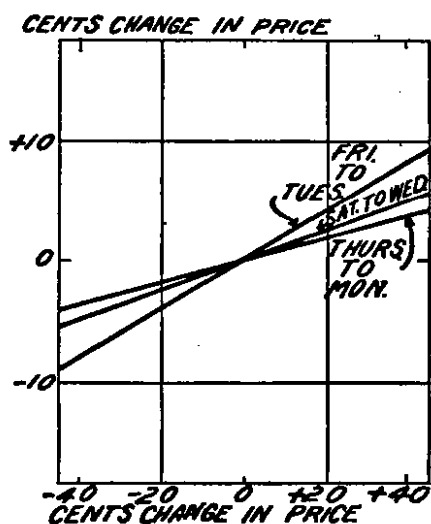


FIGURE 103. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM WEDNESDAY TO THURSDAY TO CHANGES FROM THURSDAY TO MONDAY, OF CHANGES FROM THURSDAY TO FRIDAY TO CHANGES FROM FRIDAY TO TUESDAY, AND OF CHANGES FROM FRIDAY TO SATURDAY TO CHANGES FROM SATURDAY TO WEDNESDAY, CHICAGO, 1921 TO 1928

Advances in the price from Wednesday to Thursday, from Thursday to Friday, and from Friday to Saturday, were followed by still higher prices three days later

day to Thursday. This increase was accompanied by a decline of 4 cents in the price. When the price declined 25 cents from Saturday to Monday, receipts decreased 28 per cent from Monday to Thursday and the price advanced 4 cents.

An advance of 25 cents in the price from Thursday to Friday was followed by an increase of 29 per cent in Tuesday's receipts. Despite such an increase in the supply, the price was 5 cents higher on Tuesday than on Friday.

Apparently, fluctuations in the price of hogs reflect the varying needs of the market to a remarkable degree; for, although price advances bring in larger supplies and price declines bring in smaller supplies, the effects of the latter on the price are comparatively negligible.

BEFORE AND AFTER THE WAR

During the pre-war period, from 1910 to 1913, an advance of 20 cents in the price of hogs from Saturday to Monday was followed by an advance of 1.9 cents from Monday to Tuesday, a decline of 2.1 cents

from Tuesday to Wednesday, and a decline of 1.9 cents from Wednesday to Thursday (table 57). After the war, the changes following the same

TABLE 57. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY TO SUBSEQUENT CHANGES IN THE PRICE BEFORE AND AFTER THE WAR, CHICAGO, 1910-1913 AND 1921-1924

With a change of 5 cents in price	Cents change in the price from			
	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Monday to Thursday
Before the war (1910-1913).....	+0.48	-0.52	-0.48	-0.70
After the war (1921-1924).....	+0.83	-0.92	-1.14	-1.01

advance were an advance of 3.3 cents from Monday to Tuesday, a decline of 3.7 cents from Tuesday to Wednesday, and a decline of 4.6 cents from Wednesday to Thursday.

The net change in the price from Monday to Thursday following an advance of 20 cents from Saturday to Monday, was a decline of 2.8 cents before the war and 4 cents after the war (figure 104).

Although a given price change was twice as effective in stimulating and retarding the movement of hogs to market before the war as after the war, as the price declined more, as the result of such supply changes, after the war.

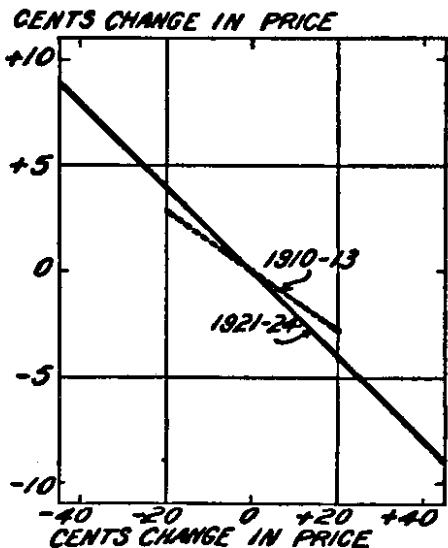


FIGURE 104. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY TO CHANGES FROM MONDAY TO THURSDAY BEFORE AND AFTER THE WAR, CHICAGO, 1910 TO 1913 AND 1921 TO 1924

The price declined from Monday to Thursday following an advance from Saturday to Monday to a greater extent after the war than before

AT THE BOTTOM AND THE TOP OF THE CYCLE

At the bottom of the cycle, when prices were low, an advance of 25 cents in the price of hogs from Saturday to Monday was followed by an advance of 4.2 cents from Monday to Tuesday (table 58). From Tuesday to Wednesday and from Wednesday to Thursday the price declined 4.6 and 5.7 cents, respectively.

At the top of the cycle, when the price advanced 25 cents from Saturday to Monday it advanced an additional 6.2 cents from Monday to Tuesday. It then declined 3 cents from Tuesday to Wednesday and 4.7 cents from Wednesday to Thursday.

The net change in the price from Monday to Thursday following an advance of 25 cents from Saturday to Monday, was a decline of 5 cents

TABLE 58. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY TO SUBSEQUENT CHANGES IN THE PRICE AT THE BOTTOM AND AT THE TOP OF THE HOG-PRICE CYCLE, CHICAGO, 1921-1924 AND 1925-1928

With a change of 5 cents in price	Cents change in the price from			
	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Monday to Thursday
Bottom of the cycle (1921-1924).....	+0.83	-0.92	-1.14	-1.01
Top of the cycle (1925-1928).....	+1.25	-0.59	-0.94	-0.05

at the bottom of the cycle and no change in the price at the top of the cycle (figure 105).

Although price advances stimulated receipts slightly more at the top than at the bottom of the cycle, the price declined more, as a consequence of increased receipts, at the bottom of the cycle.

DURING THE WINTER AND THE SUMMER MONTHS

During both the winter and the summer months, advances in the price of hogs from Saturday to Monday were followed by further advances from Monday to Tuesday, declines from Tuesday to Wednesday and from Wednesday to Thursday, and net declines from Monday to Thursday (table 59 and figure 106).

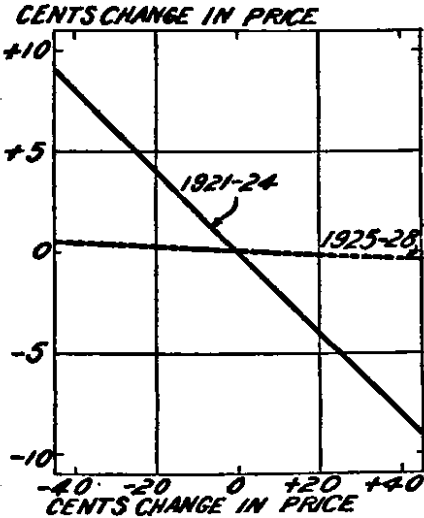


FIGURE 105. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY TO CHANGES FROM MONDAY TO THURSDAY AT THE BOTTOM AND AT THE TOP OF THE HOG-PRICE CYCLE, CHICAGO, 1921 TO 1924 AND 1925 TO 1928

The price declined from Monday to Thursday following an advance from Saturday to Monday to a greater extent at the bottom of the cycle than at the top

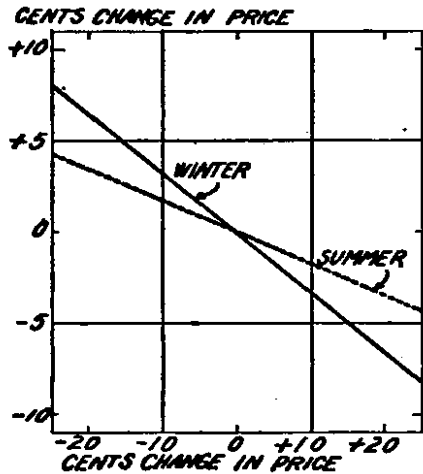


FIGURE 106. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY TO CHANGES FROM MONDAY TO THURSDAY DURING THE WINTER AND THE SUMMER MONTHS, CHICAGO, 1921 TO 1928

The price declined from Monday to Thursday following an advance from Saturday to Monday to a greater extent during the winter than during the summer

TABLE 59. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY TO SUBSEQUENT CHANGES IN THE PRICE DURING THE WINTER AND THE SUMMER MONTHS, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Cents change in the price from			
	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Monday to Thursday
In winter months.....	+0.12	-0.51	-1.38	-1.62
In summer months.....	+0.69	-0.31	-0.92	-0.86

The net decline from Monday to Thursday was somewhat greater during the winter than during the summer. When the price advanced 25 cents from Saturday to Monday in the winter, it declined 8.1 cents from Monday to Thursday. The same price advance in the summer was followed by a decline of 4.3 cents.

Price advances stimulated the movement of hogs to market more during the winter than during the summer. Also, the price declined more with such increases in the supply, in the winter than in the summer.

WHEN THE SPREAD BETWEEN TOP AND AVERAGE PRICES WAS LARGE AND WHEN IT WAS SMALL

When the difference between the top and average prices was large, an advance of 25 cents in the price from Saturday to Monday was followed by a further advance of 0.6 cent from Monday to Tuesday (table 60). When the difference between the two prices was small, a 25-cent advance was followed by a further advance of 5.6 cents.

TABLE 60. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY TO SUBSEQUENT CHANGES IN THE PRICE WHEN THE SPREAD BETWEEN TOP AND AVERAGE PRICES WAS LARGE AND WHEN IT WAS SMALL, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Cents change in the price from			
	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Monday to Thursday
Large spread.....	+0.13	-0.50	-0.63	-1.12
Small spread.....	+1.11	-0.58	-1.86	-1.35

In both cases the decline in the price from Tuesday to Wednesday was nearly the same — 2.5 cents with a large spread and 2.9 cents with a small spread. From Wednesday to Thursday the price declined 3.2 cents when the spread was large and 9.3 cents when it was small.

The net change in the price from Monday to Thursday following an advance of 25 cents from Saturday to Monday, was a 5.6-cent decline when the spread was large and a 6.8-cent decline when it was small (figure 107).

Changes in the price from Saturday to Monday affected later receipts more when the difference between the two price quotations was small

han when it was large. Also, the rice fluctuated more, as a consequence of such responses, when the pread was small than when it was irge.

FOLLOWING PRICE CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION

When the price of hogs advanced 5 cents from Saturday to Monday following declines from Friday to Saturday, an average advance of 2.4 cents from Monday to Tuesday followed (table 61). From Tuesday to Wednesday and from Wednesday to Thursday, the price declined 1.0 cent and 8.5 cents, respectively. The net change in the price from Monday to Thursday was a decline of 7.6 cents (figure 108).

When the price advanced 25 cents from Saturday to Monday following advances from Friday to Saturday, an average advance of 8.4 cents from Monday to Tuesday followed. From Tuesday to Wednesday and from Wednesday to Thursday, the price

CENTS CHANGE IN PRICE

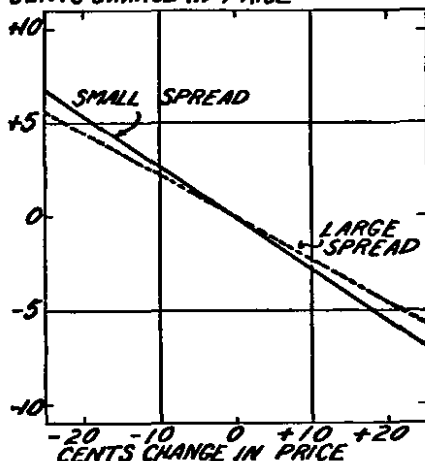


FIGURE 107. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY TO CHANGES FROM MONDAY TO THURSDAY WHEN THE SPREAD BETWEEN THE TOP AND THE AVERAGE PRICES WAS LARGE AND WHEN IT WAS SMALL, CHICAGO, 1921 TO 1928

The price declined from Monday to Thursday following an advance from Saturday to Monday to a greater extent when the spread between the top and the average prices was small than when it was large.

TABLE 61. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING CHANGES IN THE SAME AND IN THE OPPOSITE DIRECTION FROM FRIDAY TO SATURDAY, TO SUBSEQUENT CHANGES IN THE PRICE, CHICAGO, 1921 TO 1928

With a change of 5 cents in price	Cents change in the price from			
	Monday to Tuesday	Tuesday to Wednesday	Wednesday to Thursday	Monday to Thursday
Following opposite price changes.....	+0.48	-0.21	-1.70	-1.52
Following similar price changes.....	+1.69	-1.40	-1.23	-1.04

declined 7 cents and 6.2 cents, respectively. The net change in the price from Monday to Thursday was a decline of 5.2 cents (figure 109).

Even though the receipts of hogs increased much more from Monday to Thursday when advances in the price from Saturday to Monday followed advances from Friday to Saturday than when they followed declines, the price declined less from Monday to Thursday in the former case.

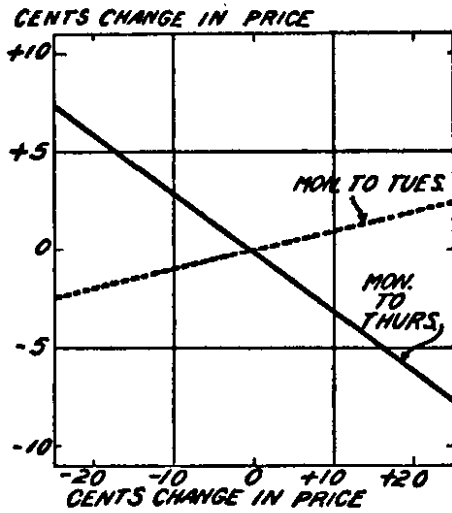


FIGURE 108. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING CHANGES IN THE OPPOSITE DIRECTION FROM FRIDAY TO SATURDAY, TO CHANGES IN THE PRICE FROM MONDAY TO TUESDAY AND FROM MONDAY TO THURSDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday following a decline from Friday to Saturday, was followed by an advance of 2.4 cents from Monday to Tuesday and a net decline of 7.6 cents from Monday to Thursday

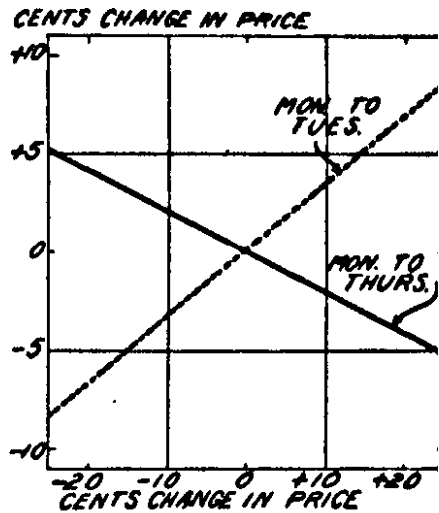


FIGURE 109. RELATION OF CHANGES IN THE AVERAGE PRICE OF HOGS FROM SATURDAY TO MONDAY FOLLOWING CHANGES IN THE SAME DIRECTION FROM FRIDAY TO SATURDAY, TO CHANGES IN THE PRICE FROM MONDAY TO TUESDAY AND FROM MONDAY TO THURSDAY, CHICAGO, 1921 TO 1928

An advance of 25 cents in the price from Saturday to Monday following an advance from Friday to Saturday, was followed by an advance of 8.4 cents from Monday to Tuesday and a net decline of 5.2 cents from Monday to Thursday

SUMMARY

In the following paragraphs a summary is given of the results of an analysis of the Chicago hog market for the years 1910 to 1913 and 1921 to 1928, inclusive.

Weekly receipts of hogs at Chicago were very unevenly distributed practically one-half reaching the market on Monday and Thursday from 3 to 4 per cent arrived on Saturday.

Weekly reshipments of hogs from Chicago to other markets were somewhat more evenly distributed than were receipts. A relatively large proportion of the hogs received during the latter part of the week were reshipped than of those that arrived early in the week.

The supply of hogs remaining for slaughter in Chicago was very unevenly distributed, there being more than 30 per cent on Monday alone

Weekly receipts were much more unevenly distributed before the war than after.

Both top and average prices averaged higher on Monday than on any other day of the week. Prices averaged lowest on Wednesday and Saturday.

Differences in the proportion of hogs received and reshipped, and in the prices paid on different days of the week, varied with the hog cycle and with the season of the year.

Daily changes in the price of hogs were largest from Saturday to Monday and smallest from Friday to Saturday.

Both top and average prices fluctuated about 1.25 per cent of the price from day to day.

Daily variability of prices was dependent upon the phase of the hog cycle and the season of the year.

The bulk of changes in hog prices from one day to the next were changes of 25 cents per hundredweight or less.

Different price changes were typical for different days of the week. From Saturday to Monday the most frequent change was a 15-cent advance. From Tuesday to Wednesday it was a 10-cent decline.

Top and average prices fluctuated most nearly together from Saturday to Monday. From Friday to Saturday the correlation was much less.

Monday's receipts of hogs were the least variable. Saturday's receipts showed the most variation.

Adjustment of daily prices to the number of hogs received was greatest on Wednesday and least on Saturday. In general, the more variable were a day's receipts, the less was the adjustment of prices to fluctuations in the receipts.

The adjustment of prices to receipts for the week as a whole was greater than for any single day.

When the period of time was extended to a year, the adjustment of prices to receipts was complete. For individual years, however, prices were not completely adjusted to receipts. Going up the hog-price cycle, prices were too high; going down the cycle, they were too low.

The adjustment of prices to receipts on Thursday was greater before the war than after; it was greater at the top of the hog cycle than at the bottom; and it was greater in the summer than in the winter.

Prices changed more in accordance with fluctuations in receipts on Monday and Thursday than on the other days of the week. Fluctuations in Saturday's receipts were the least effective.

On all days of the week, advances in the price stimulated the movement of hogs to market, and declines in the price retarded the movement.

With the single exception of changes in the price from Friday to Saturday, the greatest effect was on receipts the third day after the price change.

The greatest effect of any price change was the response of Saturday's receipts to changes in the price from Tuesday to Wednesday.

There was no significant difference in the effect of changes in the top price as compared with changes in the average price. Both were equally satisfactory measures.

Price changes affected later receipts more before the war than after. The same absolute change was nearly twice as effective.

Price changes affected later receipts more at the top of the hog-price cycle than at the bottom. However, the difference was not significant.

Price changes affected later receipts more in the winter than in the summer. Conflict with farm work in the summer prevented the shipment of hogs in response to the price stimulus alone.

Price changes affected later receipts more when the spread between top and average prices was small than when it was large. Producers followed

the market more closely when they were marketing a high-quality product than when they were marketing one of low quality.

When the price changed in the direction opposite to that of the trend in prices at the time, the effect on later receipts was greater than when changed in the same direction.

Receipts were affected more when the price changed in the same direction two days in succession than when it advanced or declined only one day.

Although two successive price changes in the same direction were more effective than one, three or more were less effective than either two or one.

On all days of the week, an advance in the price of hogs over that of the preceding day was accompanied by an increase in the proportion which was reshipped on that day.

On all days of the week, an advance in the price of hogs over that of the preceding day was followed by a decrease in the proportion which was reshipped three days later.

In general, reshipments, in percentage of receipts, tended to fluctuate inversely with receipts. When the number of hogs received was large, the percentage reshipped tended to be small, and vice versa.

There was more of a tendency to reship hogs to other markets following price advances at Chicago when the level of hog prices was high than when it was low.

Two successive price advances stimulated the movement of hogs from Chicago to other markets more than did an advance following a decline.

On all days of the week, changes in the price of hogs from one day to the next were followed by further changes in the same direction on the following day.

Although price advances stimulated and price declines retarded the movement of hogs to market on later days of the week, the average effect of such increases and decreases in the supply on the price was not great.

Although a given price change was twice as effective in stimulating as in retarding the movement of hogs to market before the war as after, the price declined more, as the result of such supply changes, in the period after the war.

Although price advances stimulated receipts slightly more at the top than at the bottom of the cycle, the price declined more, as a consequence of increased receipts, at the bottom of the cycle.

Price advances stimulated the movement of hogs to market more during the winter than during the summer. Also, the price declined more, with such increases in the supply, in the winter than in the summer.

Even though the receipts of hogs increased much more from Monday to Thursday when advances in the price from Saturday to Monday followed advances from Friday to Saturday than when they followed declines, the price declined less from Monday to Thursday in the former case.

APPENDIX

TABLE 62. EQUATIONS: RELATION OF AVERAGE PRICES TO RECEIPTS OF HOGS AT CHICAGO

When x equals receipts, and y equals the average price of hogs in percentage of normal	Equation
Monday.....	$\log y = 2.552 - 0.276 \log x$
Tuesday.....	$\log y = 2.492 - 0.246 \log x$
Wednesday.....	$\log y = 2.710 - 0.355 \log x$
Thursday.....	$\log y = 2.454 - 0.227 \log x$
Friday.....	$\log y = 2.470 - 0.235 \log x$
Saturday.....	$\log y = 2.344 - 0.172 \log x$
Thursday, 1910-1913.....	$\log y = 2.404 - 0.202 \log x$
Thursday, 1921-1924.....	$\log y = 2.302 - 0.151 \log x$
Thursday, 1925-1928.....	$\log y = 2.410 - 0.205 \log x$
Thursday, winter.....	$\log y = 2.446 - 0.223 \log x$
Thursday, summer.....	$\log y = 2.714 - 0.357 \log x$
Week.....	$\log y = 2.812 - 0.406 \log x$
Year.....	$\log y = 4.000 - 1.000 \log x$

TABLE 63. EQUATIONS: RELATION OF DAILY RECEIPTS OF HOGS TO DAILY CHANGES IN THE AVERAGE PRICE AT CHICAGO

When x equals a 5-cent change in the price of hogs	When y equals receipts in percentage of normal	Equation
Saturday to Monday.....	Monday.....	$\log y = 2.0048 - 0.0202 \log x$
Monday to Tuesday.....	Tuesday.....	$\log y = 1.9935 - 0.0097 \log x$
Tuesday to Wednesday.....	Wednesday.....	$\log y = 1.9992 - 0.0154 \log x$
Wednesday to Thursday.....	Thursday.....	$\log y = 1.9962 - 0.0228 \log x$
Thursday to Friday.....	Friday.....	$\log y = 2.0059 - 0.0166 \log x$
Friday to Saturday.....	Saturday.....	$\log y = 2.0047 - 0.0051 \log x$

TABLE 64. EQUATIONS: RELATION OF DAILY PRICE CHANGES TO LATER RECEIPTS OF HOGS

When x equals a 5-cent change in the price of hogs	When y equals the percentage change in receipts	Unadjusted equation	Adjusted equation
Average prices:			
Saturday to Monday	Tuesday (one day later)	$y = + 0.84 + 2.09x$	$y = + 2$
Saturday to Monday	Wednesday (two days later)	$y = + 0.47 + 4.41x$	$y = + 4$
Saturday to Monday	Thursday (three days later)	$y = + 1.21 + 5.70x$	$y = + 6$
Saturday to Monday	Friday (four days later)	$y = + 1.80 + 5.48x$	$y = + 8$
Saturday to Monday	Saturday (five days later)	$y = + 1.87 + 1.83x$	$y = + 1$
Saturday to Monday	Monday (six days later)	$y = + 2.74 + 3.19x$	$y = + 3$
Monday to Tuesday	Wednesday (one day later)	$y = - 0.36 + 1.70x$	$y = + 1$
Monday to Tuesday	Thursday (two days later)	$y = + 0.58 + 3.99x$	$y = + 3$
Monday to Tuesday	Friday (three days later)	$y = + 2.87 + 6.38x$	$y = + 6$
Monday to Tuesday	Saturday (four days later)	$y = + 1.39 + 5.38x$	$y = + 6$
Monday to Tuesday	Monday (five days later)	$y = + 1.12 + 8.97x$	$y = + 3$
Monday to Tuesday	Tuesday (six days later)	$y = - 1.39 + 1.84x$	$y = + 1$
Tuesday to Wednesday	Thursday (one day later)	$y = + 0.82 + 1.32x$	$y = + 1$
Tuesday to Wednesday	Friday (two days later)	$y = + 2.00 + 4.45x$	$y = + 4$
Tuesday to Wednesday	Saturday (three days later)	$y = + 4.01 + 7.89x$	$y = + 7$
Tuesday to Wednesday	Monday (four days later)	$y = + 1.82 + 4.18x$	$y = + 4$
Tuesday to Wednesday	Tuesday (five days later)	$y = + 0.23 + 3.01x$	$y = + 3$
Tuesday to Wednesday	Wednesday (six days later)	$y = - 1.13 + 4.31x$	$y = + 4$
Wednesday to Thursday	Friday (one day later)	$y = + 1.49 + 1.25x$	$y = + 1$
Wednesday to Thursday	Saturday (two days later)	$y = + 4.32 + 5.62x$	$y = + 5$
Wednesday to Thursday	Monday (three days later)	$y = + 3.43 + 5.58x$	$y = + 5$
Wednesday to Thursday	Tuesday (four days later)	$y = - 0.26 + 4.46x$	$y = + 4$
Wednesday to Thursday	Wednesday (five days later)	$y = + 2.30 + 3.27x$	$y = + 3$
Wednesday to Thursday	Thursday (six days later)	$y = + 0.26 + 3.99x$	$y = + 3$
Thursday to Friday	Saturday (one day later)	$y = + 1.02 + 0.49x$	$y = + 0$
Thursday to Friday	Monday (two days later)	$y = + 0.05 + 3.85x$	$y = + 2$
Thursday to Friday	Tuesday (three days later)	$y = - 0.80 + 5.69x$	$y = + 5$
Thursday to Friday	Wednesday (four days later)	$y = - 0.58 + 3.69x$	$y = + 3$
Thursday to Friday	Thursday (five days later)	$y = - 0.97 + 3.40x$	$y = + 3$
Thursday to Friday	Friday (six days later)	$y = - 0.27 + 3.87x$	$y = + 3$
Friday to Saturday	Monday (one day later)	$y = - 0.02 + 1.22x$	$y = + 1$
Friday to Saturday	Tuesday (two days later)	$y = + 0.11 + 3.84x$	$y = + 2$
Friday to Saturday	Wednesday (three days later)	$y = + 0.37 + 3.62x$	$y = + 2$
Friday to Saturday	Thursday (four days later)	$y = + 0.02 + 3.18x$	$y = + 3$
Friday to Saturday	Friday (five days later)	$y = + 0.82 + 3.99x$	$y = + 3$
Friday to Saturday	Saturday (six days later)	$y = + 1.18 + 3.78x$	$y = + 3$
Saturday to Monday:			
Top prices, 1921-1928	Tuesday (one day later)	$y = - 0.63 + 2.34x$	$y = + 2$
Top prices, 1921-1928	Wednesday (two days later)	$y = - 0.86 + 4.43x$	$y = + 4$
Top prices, 1921-1928	Thursday (three days later)	$y = - 0.37 + 5.82x$	$y = + 5$
Average prices, 1910-1913	Tuesday (one day later)	$y = + 2.84 + 7.90x$	$y = + 7$
Average prices, 1910-1913	Wednesday (two days later)	$y = + 4.52 + 9.22x$	$y = + 8$
Average prices, 1910-1913	Thursday (three days later)	$y = + 4.06 + 10.32x$	$y = + 9$
Top prices, 1910-1913	Tuesday (one day later)	$y = - 0.22 + 7.48x$	$y = + 7$
Top prices, 1910-1913	Wednesday (two days later)	$y = + 0.75 + 8.70x$	$y = + 8$
Top prices, 1910-1913	Thursday (three days later)	$y = - 0.72 + 9.37x$	$y = + 9$
Average prices, 1921-1924	Tuesday (one day later)	$y = + 1.06 + 1.59x$	$y = + 1$
Average prices, 1921-1924	Wednesday (two days later)	$y = + 1.41 + 4.09x$	$y = + 4$
Average prices, 1921-1924	Thursday (three days later)	$y = + 1.73 + 5.51x$	$y = + 5$
Average prices, 1925-1928	Tuesday (one day later)	$y = + 0.10 + 2.94x$	$y = + 2$
Average prices, 1925-1928	Wednesday (two days later)	$y = - 0.48 + 4.89x$	$y = + 4$
Average prices, 1925-1928	Thursday (three days later)	$y = + 0.11 + 5.90x$	$y = + 5$
Average prices, winter	Tuesday (one day later)	$y = + 10.35 + 3.25x$	$y = + 2$
Average prices, winter	Wednesday (two days later)	$y = + 1.69 + 4.80x$	$y = + 4$
Average prices, winter	Thursday (three days later)	$y = + 10.10 + 7.20x$	$y = + 6$
Average prices, summer	Tuesday (one day later)	$y = - 12.88 + 2.42x$	$y = + 2$
Average prices, summer	Wednesday (two days later)	$y = - 1.42 + 4.26x$	$y = + 4$
Average prices, summer	Thursday (three days later)	$y = - 11.26 + 5.13x$	$y = + 5$
Average prices, large spread	Tuesday (one day later)	$y = - 0.30 + 2.40x$	$y = + 2$
Average prices, large spread	Wednesday (two days later)	$y = + 0.26 + 4.07x$	$y = + 4$
Average prices, large spread	Thursday (three days later)	$y = - 1.98 + 4.57x$	$y = + 4$
Average prices, small spread	Tuesday (one day later)	$y = + 2.14 + 4.24x$	$y = + 4$
Average prices, small spread	Wednesday (two days later)	$y = + 1.07 + 6.23x$	$y = + 6$
Average prices, small spread	Thursday (three days later)	$y = + 4.85 + 9.16x$	$y = + 8$
Top prices, large spread	Tuesday (one day later)	$y = - 0.92 + 2.45x$	$y = + 2$
Top prices, large spread	Wednesday (two days later)	$y = - 1.06 + 4.94x$	$y = + 4$
Top prices, large spread	Thursday (three days later)	$y = - 4.45 + 5.76x$	$y = + 6$
Top prices, small spread	Tuesday (one day later)	$y = + 1.17 + 2.89x$	$y = + 2$
Top prices, small spread	Wednesday (two days later)	$y = - 0.68 + 5.28x$	$y = + 5$
Top prices, small spread	Thursday (three days later)	$y = + 3.25 + 7.57x$	$y = + 7$
Average prices, prices falling	Tuesday (one day later)	$y = + 0.07 + 2.63x$	$y = + 2$
Average prices, prices falling	Wednesday (two days later)	$y = + 2.44 + 4.39x$	$y = + 4$
Average prices, prices falling	Thursday (three days later)	$y = + 1.91 + 5.12x$	$y = + 5$

TABLE 64 (concluded)

When x equals a 5-cent change in the price of hogs	When y equals the percentage change in receipts	Unadjusted equation	Adjusted equation
Saturday to Monday (concluded):			
Average prices, prices rising.....	Tuesday (one day later).....	$y = -0.49 + 2.00x$	$y = +2.61x$
Average prices, prices rising.....	Wednesday (two days later).....	$y = -3.15 + 5.07x$	$y = +5.23x$
Average prices, prices rising.....	Thursday (three days later).....	$y = -1.28 + 5.93x$	$y = +6.01x$
Average prices advances during rising and declines during falling prices	Tuesday (one day later).....	$y = +0.74 + 2.40x$	$y = +2.38x$
Average prices advances during rising and declines during falling prices	Wednesday (two days later).....	$y = +2.00 + 3.98x$	$y = +3.90x$
Average prices advances during rising and declines during falling prices	Thursday (three days later).....	$y = +2.23 + 5.39x$	$y = +5.27x$
Average prices advances during falling and declines during rising prices	Tuesday (one day later).....	$y = -2.69 + 3.09x$	$y = +3.18x$
Average prices advances during falling and declines during rising prices	Wednesday (two days later).....	$y = -4.09 + 5.66x$	$y = +5.80x$
Average prices advances during falling and declines during rising prices	Thursday (three days later).....	$y = -3.51 + 7.34x$	$y = +7.63x$
Following price changes on the preceding day in the opposite direction:			
Saturday to Monday.....	Tuesday (one day later).....	$y = -0.60 + 2.85x$	$y = +2.87x$
Saturday to Monday.....	Wednesday (two days later).....	$y = -0.20 + 5.02x$	$y = +5.03x$
Saturday to Monday.....	Thursday (three days later).....	$y = -0.80 + 6.79x$	$y = +6.84x$
Saturday to Monday.....	Friday (four days later).....	$y = -1.58 + 3.73x$	$y = +3.75x$
Saturday to Monday.....	Saturday (five days later).....	$y = +1.00 + 2.38x$	$y = +2.34x$
Saturday to Monday.....	Monday (six days later).....	$y = -0.68 + 4.09x$	$y = +4.12x$
Monday to Tuesday.....	Wednesday (one day later).....	$y = -2.69 + 0.19x$	$y = +0.20x$
Monday to Tuesday.....	Thursday (two days later).....	$y = -1.64 + 0.37x$	$y = +0.38x$
Monday to Tuesday.....	Friday (three days later).....	$y = -2.61 + 5.20x$	$y = +5.44x$
Tuesday to Wednesday.....	Thursday (one day later).....	$y = +0.18 + 0.06x$	$y = +0.06x$
Tuesday to Wednesday.....	Friday (two days later).....	$y = +1.76 + 2.46x$	$y = +2.42x$
Tuesday to Wednesday.....	Saturday (three days later).....	$y = +1.18 + 7.18x$	$y = +7.10x$
Wednesday to Thursday.....	Friday (one day later).....	$y = -0.55 - 0.98x$	$y = -0.99x$
Wednesday to Thursday.....	Saturday (two days later).....	$y = -2.45 + 2.41x$	$y = +2.47x$
Wednesday to Thursday.....	Monday (three days later).....	$y = -0.03 + 3.18x$	$y = +3.18x$
Thursday to Friday.....	Saturday (one day later).....	$y = +6.11 - 4.32x$	$y = -4.07x$
Thursday to Friday.....	Monday (two days later).....	$y = +1.91 + 1.81x$	$y = +1.78x$
Thursday to Friday.....	Tuesday (three days later).....	$y = -1.60 + 5.22x$	$y = +5.91x$
Friday to Saturday.....	Monday (one day later).....	$y = +4.71 + 5.61x$	$y = +6.36x$
Friday to Saturday.....	Tuesday (two days later).....	$y = +4.23 + 10.61x$	$y = +10.18x$
Friday to Saturday.....	Wednesday (three days later).....	$y = -0.05 + 7.83x$	$y = +7.83x$
Following price changes on the preceding day in the same direction:			
Saturday to Monday.....	Tuesday (one day later).....	$y = +1.00 + 2.76x$	$y = +2.73x$
Saturday to Monday.....	Wednesday (two days later).....	$y = +5.00 + 8.13x$	$y = +7.74x$
Saturday to Monday.....	Thursday (three days later).....	$y = +3.60 + 11.51x$	$y = +10.80x$
Saturday to Monday.....	Friday (four days later).....	$y = +6.76 + 9.67x$	$y = +8.98x$
Saturday to Monday.....	Saturday (five days later).....	$y = +4.94 + 9.10x$	$y = +8.67x$
Saturday to Monday.....	Monday (six days later).....	$y = +6.91 + 9.84x$	$y = +9.20x$
Monday to Tuesday.....	Wednesday (one day later).....	$y = +3.22 + 3.81x$	$y = +3.69x$
Monday to Tuesday.....	Thursday (two days later).....	$y = +1.35 + 7.13x$	$y = +7.04x$
Monday to Tuesday.....	Friday (three days later).....	$y = +5.85 + 8.57x$	$y = +8.10x$
Tuesday to Wednesday.....	Thursday (one day later).....	$y = +2.18 + 2.34x$	$y = +2.29x$
Tuesday to Wednesday.....	Friday (two days later).....	$y = +1.20 + 8.06x$	$y = +7.96x$
Tuesday to Wednesday.....	Saturday (three days later).....	$y = -0.55 + 12.04x$	$y = +12.11x$
Wednesday to Thursday.....	Friday (one day later).....	$y = -0.03 + 1.59x$	$y = +1.60x$
Wednesday to Thursday.....	Saturday (two days later).....	$y = +5.05 + 6.78x$	$y = +6.45x$
Wednesday to Thursday.....	Monday (three days later).....	$y = +0.79 + 8.97x$	$y = +8.90x$
Thursday to Friday.....	Saturday (one day later).....	$y = -2.15 + 1.26x$	$y = +1.29x$
Thursday to Friday.....	Monday (two days later).....	$y = -1.21 + 5.39x$	$y = +5.46x$
Thursday to Friday.....	Tuesday (three days later).....	$y = +4.73 + 7.68x$	$y = +7.33x$
Friday to Saturday.....	Monday (one day later).....	$y = -8.83 - 3.28x$	$y = -3.41x$
Friday to Saturday.....	Tuesday (two days later).....	$y = +0.82 - 1.61x$	$y = -1.60x$
Friday to Saturday.....	Wednesday (three days later).....	$y = +1.78 - 0.23x$	$y = -0.23x$
Following price changes two or more days in the same direction:			
Saturday to Monday.....	Tuesday (one day later).....	$y = -0.34 + 4.88x$	$y = +4.88x$
Saturday to Monday.....	Wednesday (two days later).....	$y = +2.18 + 5.37x$	$y = +5.26x$
Saturday to Monday.....	Thursday (three days later).....	$y = +2.25 + 5.23x$	$y = +5.11x$
Saturday to Monday.....	Friday (four days later).....	$y = +6.28 + 4.73x$	$y = +4.45x$
Saturday to Monday.....	Saturday (five days later).....	$y = +3.66 + 2.47x$	$y = +2.68x$
Saturday to Monday.....	Monday (six days later).....	$y = +3.31 + 3.53x$	$y = +3.42x$

TABLE 65. EQUATIONS: RELATION OF DAILY PRICE CHANGES TO RESHIPMENT OF HOGS

When x equals a 5-cent change in the price of hogs	When y equals the percentage change in receipts reshipped	Unadjusted equation	Adjusted equation
Average prices:			
Saturday to Monday	Monday	$y = + 0.13 + 2.86x$	$y = + 3$
Saturday to Monday	Tuesday (one day later)	$y = - 0.87 - 1.10x$	$y = - 1$
Saturday to Monday	Wednesday (two days later)	$y = + 0.88 - 2.37x$	$y = - 2$
Saturday to Monday	Thursday (three days later)	$y = - 0.20 - 1.20x$	$y = - 1$
Monday to Tuesday	Tuesday	$y = + 2.04 + 7.04x$	$y = + 6$
Monday to Tuesday	Wednesday (one day later)	$y = + 0.40 + 2.80x$	$y = + 2$
Monday to Tuesday	Thursday (two days later)	$y = - 0.73 + 0.80x$	$y = + 0$
Monday to Tuesday	Friday (three days later)	$y = + 0.78 - 2.37x$	$y = - 2$
Tuesday to Wednesday	Wednesday	$y = + 1.61 + 4.70x$	$y = + 4$
Tuesday to Wednesday	Thursday (one day later)	$y = + 0.80 + 2.35x$	$y = + 2$
Tuesday to Wednesday	Friday (two days later)	$y = + 0.65 - 0.76x$	$y = - 0$
Tuesday to Wednesday	Saturday (three days later)	$y = - 2.33 - 2.92x$	$y = - 4$
Wednesday to Thursday	Thursday	$y = - 0.18 + 6.44x$	$y = + 6$
Wednesday to Thursday	Friday (one day later)	$y = + 0.22 + 1.45x$	$y = + 1$
Wednesday to Thursday	Saturday (two days later)	$y = - 2.22 - 2.83x$	$y = - 2$
Wednesday to Thursday	Monday (three days later)	$y = - 1.76 - 0.13x$	$y = - 0$
Thursday to Friday	Friday	$y = + 0.80 + 2.70x$	$y = + 2$
Thursday to Friday	Saturday (one day later)	$y = - 2.50 + 1.22x$	$y = + 1$
Thursday to Friday	Monday (two days later)	$y = - 1.08 - 0.49x$	$y = - 0$
Thursday to Friday	Tuesday (three days later)	$y = + 1.34 - 2.55x$	$y = - 2$
Friday to Saturday	Saturday	$y = + 3.02 + 6.63x$	$y = + 6$
Friday to Saturday	Monday (one day later)	$y = - 1.25 + 2.87x$	$y = + 2$
Friday to Saturday	Tuesday (two days later)	$y = + 0.13 + 0.83x$	$y = + 0$
Friday to Saturday	Wednesday (three days later)	$y = - 0.92 - 0.06x$	$y = - 0$
Saturday to Monday:			
1910-1913	Monday	$y = + 2.20 + 7.35x$	$y = + 7$
1910-1913	Tuesday	$y = + 1.14 + 2.72x$	$y = + 2$
1910-1913	Wednesday	$y = - 0.05 + 1.70x$	$y = + 1$
1910-1913	Thursday	$y = + 0.77 + 0.56x$	$y = + 0$
1921-1924	Monday	$y = - 6.89 + 1.73x$	$y = + 1$
1921-1924	Tuesday	$y = - 7.92 - 2.10x$	$y = - 2$
1921-1924	Wednesday	$y = + 0.61 - 2.12x$	$y = - 2$
1921-1924	Thursday	$y = - 2.90 - 1.04x$	$y = - 1$
1925-1928	Monday	$y = + 6.84 + 2.09x$	$y = + 2$
1925-1928	Tuesday	$y = + 6.10 - 0.59x$	$y = - 0$
1925-1928	Wednesday	$y = + 0.18 - 1.74x$	$y = - 1$
1925-1928	Thursday	$y = + 2.61 - 0.94x$	$y = - 0$
Winter months	Monday	$y = + 7.26 + 1.41x$	$y = + 1$
Winter months	Tuesday	$y = + 2.34 - 2.42x$	$y = - 2$
Winter months	Wednesday	$y = + 11.25 - 2.32x$	$y = - 4$
Winter months	Thursday	$y = + 8.26 - 2.29x$	$y = - 2$
Summer months	Monday	$y = - 12.08 + 2.33x$	$y = + 2$
Summer months	Tuesday	$y = - 10.93 + 0.86x$	$y = + 0$
Summer months	Wednesday	$y = - 16.22 + 0.77x$	$y = + 0$
Summer months	Thursday	$y = - 17.95 + 0.67x$	$y = + 0$
Large spread between prices	Monday	$y = + 1.97 + 1.02x$	$y = + 1$
Large spread between prices	Tuesday (one day later)	$y = + 2.18 - 1.74x$	$y = - 1$
Large spread between prices	Wednesday (two days later)	$y = + 2.92 - 0.82x$	$y = - 0$
Large spread between prices	Thursday (three days later)	$y = - 0.61 - 2.22x$	$y = - 2$
Small spread between prices	Monday	$y = - 2.18 + 2.00x$	$y = + 2$
Small spread between prices	Tuesday (one day later)	$y = - 5.16 - 2.04x$	$y = - 2$
Small spread between prices	Wednesday (two days later)	$y = - 2.72 - 4.72x$	$y = - 4$
Small spread between prices	Thursday (three days later)	$y = - 9.47 - 2.10x$	$y = - 3$
Following opposite price changes	Monday	$y = - 1.12 + 1.10x$	$y = + 1$
Following opposite price changes	Tuesday (one day later)	$y = - 2.83 - 1.92x$	$y = - 1$
Following opposite price changes	Wednesday (two days later)	$y = - 0.01 - 2.77x$	$y = - 2$
Following opposite price changes	Thursday (three days later)	$y = - 1.58 - 2.05x$	$y = - 2$
Following similar price changes	Monday	$y = + 0.28 + 6.75x$	$y = + 6$
Following similar price changes	Tuesday (one day later)	$y = - 2.35 - 0.06x$	$y = - 0$
Following similar price changes	Wednesday (two days later)	$y = + 2.20 + 1.05x$	$y = + 1$
Following similar price changes	Thursday (three days later)	$y = - 1.47 + 0.41x$	$y = + 0$

TABLE 66. EQUATIONS: RELATION OF DAILY PRICE CHANGES TO SUBSEQUENT CHANGES IN THE PRICE OF HOGS

When x equals a 5-cent change in the price of hogs	When y equals the change in price, in cents	Unadjusted equation	Adjusted equation
Average prices:	Average prices:		
Saturday to Monday	Monday to Tuesday	$y = -3.07 + 0.93x$	$y = +0.96x$
Saturday to Monday	Tuesday to Wednesday	$y = -0.56 - 0.80x$	$y = -0.80x$
Saturday to Monday	Wednesday to Thursday	$y = +1.47 - 1.04x$	$y = -1.02x$
Saturday to Monday	Monday to Tuesday	$y = -1.89 - 0.81x$	$y = -0.82x$
Sunday to Tuesday	Tuesday to Wednesday	$y = -0.64 + 0.95x$	$y = +0.96x$
Sunday to Tuesday	Wednesday to Thursday	$y = +0.63 - 0.40x$	$y = -0.40x$
Sunday to Tuesday	Thursday to Friday	$y = -2.08 - 0.87x$	$y = -0.89x$
Sunday to Tuesday	Tuesday to Friday	$y = +1.51 - 0.25x$	$y = -0.25x$
Tuesday to Wednesday	Wednesday to Thursday	$y = +1.48 + 1.63x$	$y = +1.61x$
Tuesday to Wednesday	Thursday to Friday	$y = +1.46 - 0.32x$	$y = -0.32x$
Tuesday to Wednesday	Friday to Saturday	$y = -2.75 - 0.38x$	$y = -0.39x$
Tuesday to Wednesday	Wednesday to Saturday	$y = -0.06 + 0.84x$	$y = +0.84x$
Wednesday to Thursday	Thursday to Friday	$y = +1.15 + 1.35x$	$y = +1.33x$
Wednesday to Thursday	Friday to Saturday	$y = -2.83 - 0.71x$	$y = -0.73x$
Wednesday to Thursday	Saturday to Monday	$y = +1.62 - 0.19x$	$y = -0.19x$
Wednesday to Thursday	Thursday to Monday	$y = -0.04 + 0.45x$	$y = +0.45x$
Thursday to Friday	Friday to Saturday	$y = -3.08 + 0.69x$	$y = +0.71x$
Thursday to Friday	Saturday to Monday	$y = +1.66 + 0.61x$	$y = +0.60x$
Thursday to Friday	Monday to Tuesday	$y = -2.35 - 0.34x$	$y = -0.35x$
Thursday to Friday	Friday to Tuesday	$y = -2.89 + 0.96x$	$y = +0.99x$
Friday to Saturday	Saturday to Monday	$y = +2.40 + 0.83x$	$y = +0.81x$
Friday to Saturday	Monday to Tuesday	$y = -2.05 + 0.86x$	$y = +0.88x$
Friday to Saturday	Tuesday to Wednesday	$y = -1.23 - 0.83x$	$y = -0.84x$
Friday to Saturday	Saturday to Wednesday	$y = -1.02 + 0.60x$	$y = +0.61x$
Saturday to Monday:			
1910-1913	Monday to Tuesday	$y = -1.63 + 0.46x$	$y = +0.48x$
1910-1913	Tuesday to Wednesday	$y = -1.32 - 0.50x$	$y = -0.52x$
1910-1913	Wednesday to Thursday	$y = +0.81 - 0.49x$	$y = -0.48x$
1910-1913	Monday to Tuesday	$y = -2.00 - 0.68x$	$y = -0.70x$
1921-1924	Monday to Tuesday	$y = -1.20 + 0.82x$	$y = +0.83x$
1921-1924	Tuesday to Wednesday	$y = -0.28 - 0.92x$	$y = -0.92x$
1921-1924	Wednesday to Thursday	$y = +1.86 - 1.16x$	$y = -1.14x$
1921-1924	Monday to Thursday	$y = +0.23 - 1.01x$	$y = -1.01x$
1925-1928	Monday to Tuesday	$y = -4.30 + 1.20x$	$y = +1.25x$
1925-1928	Tuesday to Wednesday	$y = -1.08 - 0.53x$	$y = -0.59x$
1925-1928	Wednesday to Thursday	$y = +1.08 - 0.95x$	$y = -0.94x$
1925-1928	Monday to Thursday	$y = -3.22 - 0.05x$	$y = -0.05x$
Winter months	Monday to Tuesday	$y = -1.76 + 0.12x$	$y = +0.12x$
Winter months	Tuesday to Wednesday	$y = -1.68 - 0.50x$	$y = -0.51x$
Winter months	Wednesday to Thursday	$y = -0.34 - 1.38x$	$y = -1.38x$
Winter months	Monday to Thursday	$y = -4.44 - 1.55x$	$y = -1.62x$
Summer months	Monday to Tuesday	$y = -3.12 + 0.67x$	$y = +0.69x$
Summer months	Tuesday to Wednesday	$y = -0.46 - 0.31x$	$y = -0.31x$
Summer months	Wednesday to Thursday	$y = +2.65 - 0.94x$	$y = -0.92x$
Summer months	Monday to Thursday	$y = -0.78 - 0.85x$	$y = -0.86x$
Large spread between prices	Monday to Tuesday	$y = -4.47 + 0.12x$	$y = +0.13x$
Large spread between prices	Tuesday to Wednesday	$y = -0.54 - 0.50x$	$y = -0.50x$
Large spread between prices	Wednesday to Thursday	$y = +3.93 - 0.65x$	$y = -0.63x$
Large spread between prices	Monday to Thursday	$y = -2.05 - 1.10x$	$y = -1.12x$
Small spread between prices	Monday to Tuesday	$y = -0.87 + 1.10x$	$y = +1.11x$
Small spread between prices	Tuesday to Wednesday	$y = -1.53 - 0.57x$	$y = -0.58x$
Small spread between prices	Wednesday to Thursday	$y = -0.86 - 1.84x$	$y = -1.84x$
Small spread between prices	Monday to Thursday	$y = -3.27 - 1.31x$	$y = -1.35x$
Following opposite price changes	Monday to Tuesday	$y = -3.45 + 0.48x$	$y = +0.48x$
Following opposite price changes	Tuesday to Wednesday	$y = -1.46 - 0.21x$	$y = -0.21x$
Following opposite price changes	Wednesday to Thursday	$y = +1.43 - 1.72x$	$y = -1.70x$
Following opposite price changes	Monday to Thursday	$y = -3.50 - 1.47x$	$y = -1.52x$
Following similar price changes	Monday to Tuesday	$y = -3.69 + 1.63x$	$y = +1.69x$
Following similar price changes	Tuesday to Wednesday	$y = -0.19 - 1.40x$	$y = -1.40x$
Following similar price changes	Wednesday to Thursday	$y = +1.05 - 1.24x$	$y = -1.23x$
Following similar price changes	Monday to Thursday	$y = -3.45 - 1.00x$	$y = -1.04x$

PRICES AND COSTS

TIME was when most of the information about agriculture had to do with producing crops. In more recent years the United States Department of Agriculture, and the State Colleges of Agriculture and State Experiment Stations, have recognized the great importance of marketing crops as well as growing them. Studies of the costs of growing crops and of the prices received for them now form a large part of the publication output.

Cornell has made many such studies. Among them are:

- ✓ Wholesale prices and receipts of apples in Boston for thirty-six years (E 28) *Rogers*
- ✓ A survey of some public produce markets in up-state New York (P 525) *Weaver*
- ✓ Some facts concerning the distribution of fruits and vegetables by wholesalers and jobbers in large terminal markets (P 494) *Rasmussen*

These and others may be obtained from the Office of Publication, College of Agriculture, Ithaca, New York.

They Are Free