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Price Differences Between Four Hog Markets Used By Illinois Stockmen

Chicago, East St. Louis,
Indianapolis, and
Cincinnati

By L. J. NORTON
and R. C. ASHBY

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Price Differences Between Four Hog Markets Used by Illinois Stockmen

By L. J. NORTON, Assistant Chief in Agricultural Economics; and
R. C. ASHBY, Associate Chief in Livestock Marketing¹

THE HIGH DEGREE of price variability that exists among livestock markets is generally recognized as a handicap to marketing. A variation of 25 cents a hundred on a drove of 50 hogs in the 200-pound class represents a difference of \$25 in the selling price.

Producers understand the general nature of the hog-price structure. Prices tend to be higher in eastern than in western parts of the corn belt. The direction of traffic in hogs is toward the consuming centers in the northeastern and eastern parts of the country. Hence the markets in Omaha, St. Joseph, and Sioux City tend to be lower than those in Chicago and East St. Louis, and those in Chicago and East St. Louis in turn tend to be lower than those in Indianapolis and Cincinnati, the differences being approximately the differences in costs of shipping, including freight, shrinkage, and the other elements which enter into the cost.

The nature of the fluctuations that take place in these price differences, both seasonal and day-to-day, are not so commonly understood, and it is with these differences as they have to do with four markets of interest to Illinois producers, Chicago, East St. Louis, Indianapolis, and Cincinnati, that this study deals. What are the usual differences between these four markets in prices of hogs of similar weight and grade? How much seasonal variation is there in these differences? How much daily variation? It is questions such as these that this study aims to answer.

Sources of Data. For these four markets price data compiled by the Market News Service on Livestock of the U. S. Department of Agriculture are available. The Chicago and East St. Louis prices used in this study were taken directly from daily mimeographed reports; those for the other two markets were taken from copies of the summaries that are compiled in Washington, D.C., from daily reports for

¹Acknowledgment is made of the assistance of Rodney Whitaker, R. H. Goold, and Dr. Oswald Vopelius, formerly Research Assistants in Agricultural Economics, in statistical work in connection with this study, and to D. J. Slater, Bureau of Agricultural Economics, U. S. Department of Agriculture, for assistance and cooperation in the market inspections made to determine comparability in character of hog receipts at markets included in the study.

each market. For all four markets the data represent the views of trained price reporters who work with the various buyers and sellers in the market during the trading period, getting information as to prices on actual purchases and sales.

The quotations used in this study refer to closing prices; they therefore represent the situation after the various factors operating to make each day's market have worked out their influence. Inasmuch as prices may vary during the day, these closing prices do not necessarily represent the average price received for all stock on that particular day.

Comparisons have been made for only two weight-classes of hogs; namely, light (160 to 200 pounds) and medium (200 to 250 pounds). Prior to July 1, 1930, the information available on the daily sheets was limited to these weights. Beginning on that date each weight-class was divided into two separate classes. Medium-weight hogs, for example, were divided into a 200-to-220-pound class and a 220-to-250-pound class. For each weight-class a price range is reported. Prior to July 1, 1930, the price range referred to *medium-to-choice* hogs, but beginning on that date it referred to *good-to-choice* hogs.

Two series of price comparisons have been used in this study: one between "top" prices, or the highest quotations within the weight-class, and the other between "average" prices, or the average of the *range* quoted for each weight-class. For obvious reasons the "top" figure has a more definite meaning than the "average" figure. The lower value in the range from which the prices for average hogs were calculated is at best indefinite and its meaning more difficult to establish accurately than the top. Since July 1, 1930, the average should have a little more definite meaning, since it represents merely the range on a quality of hogs which are lumped together frequently in actual buying practice.

FACTORS INFLUENCING FARMERS IN CHOICE OF MARKETS IN COMPETITIVE TERRITORY

Some farmers have little or no choice of markets for their livestock. From a certain zone around every market, whether it is large or small, livestock naturally gravitate to that market, the area of the zone being influenced of course by the size of the market. Convenience and comparative marketing costs are of basic importance in this situation. Before the extensive development of truck transportation, railroad rates and service were major factors determining the area of these zones. Important livestock markets can develop only at railroad centers, and the railroad lines converging at such points give rates and service which make their markets the favored points within a large

zone surrounding them. Truck transportation intensifies the tendency to use near-by markets and largely determines the zone of influence of the smaller markets.

At many points in Illinois, however, there is opportunity for a choice of markets. Three factors govern selection—comparative prices, comparative transportation costs, and convenience. In the matter of convenience available train service is a very important and in many cases a controlling factor.

The railroad map of Illinois shows two major focal points to which traffic in general, including livestock, naturally moves because of rates and service. These points are Chicago and East St. Louis. The map is complicated, however, by the large numbers of railroad lines that run from east to west across the central and southern parts of the state. Within the zones influenced by these lines, a strong pull is exerted to move livestock to Indianapolis, Cincinnati, or some other eastern point.

The increased miles of hard roads and increased use of trucks widens the area over which competitive marketing influences operate. Livestock may now be moved more readily to railroads with different rates and connections; and thus stockmen can use outlets that formerly were not available because of the expense of reaching them.

The relative importance of shipments of hogs from different sections of Illinois to Chicago and East St. Louis is shown in Fig. 1. From the northern and northwestern parts of the state practically no shipments go to East St. Louis; from the southern and southwestern parts practically no shipments go to Chicago; and from an intermediate area shipments go in considerable volume to both Chicago and East St. Louis. This intermediate area is most extensive in the counties west of the Illinois river, extending from Pike on the south to Hancock, Warren, and Peoria counties on the north. Another competitive area is indicated in the south-central part of the state, centering around Sangamon and Christian counties, with most of the hogs from this area going to East St. Louis.

The influence of intermarket shipments from the Peoria and East St. Louis markets is shown by this map. The shipments from Peoria county were largely reshipments to the other markets, and the shipments from St. Clair county to Chicago represent reshipments, probably of sows, from the East St. Louis market.

The areas shipping by truck to Chicago and to East St. Louis are of course within the areas that ship by rail to the same markets. If truck shipments were included on the map, much larger shipments would be indicated from the counties around Chicago and East St. Louis.

The zones of influence of certain other markets are also shown in Fig. 1. The influence of the Peoria market is indicated by the small shipments to either Chicago or East St. Louis from counties around

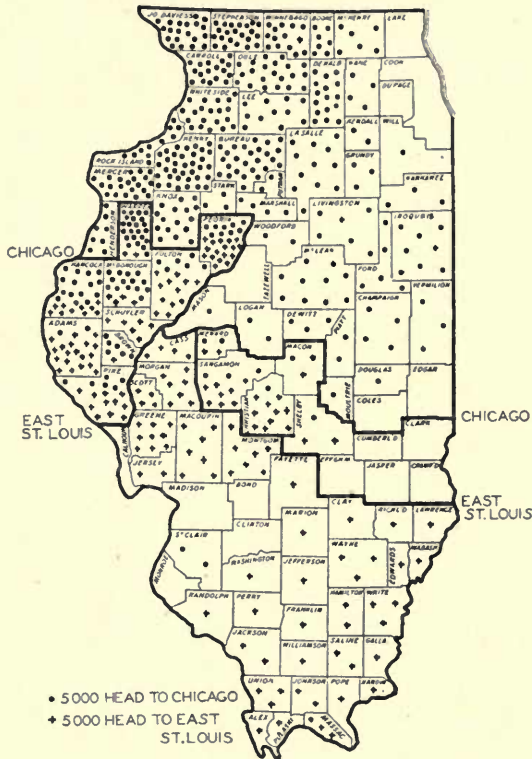


FIG. 1.—RAILROAD RECEIPTS OF HOGS AT CHICAGO AND EAST ST. LOUIS FROM ILLINOIS COUNTIES, 1927

Areas are indicated as follows: northern, from which practically no hogs go to East St. Louis; southern, from which practically none go to Chicago; and an intermediate competitive area, from which shipments in volume go in both directions. This latter is most extensively developed in the counties west of the Illinois river. (Data from Packers and Stockyards Administration).

Peoria. The small shipments or absence of shipments to those markets from counties along the eastern side of the state, and from some of the central counties, indicate the areas that ship to Indianapolis and to other markets east of Illinois.

No detailed graphs or tables are presented to show the comparative freight rates or train service from different sections of Illinois. There are two reasons for this omission: first, there is so much varia-

tion in these items that a composite picture would not reveal clear-cut differences; second, the problem is local, and the data for dealing with any local situation can be quickly and clearly ascertained by interested parties. So while this publication treats only of matters of price differences between markets, it is of course understood that questions of comparative cost and convenience in transportation are always involved in determining choice of markets.

NATURE OF MARKETS STUDIED

Chicago is the largest hog market in the United States, both with respect to receipts and number of animals slaughtered. In recent years "directs," that is, hogs bought at outside points and shipped direct to Chicago packers, have come to represent a sizeable fraction of the total receipts, constituting approximately one-third of the total receipts in 1931. In spite of the growth in the importance of "directs" there is still a very large number of hogs consigned for sale on the open market at Chicago. The number reshipped from this market is relatively small in comparison with the number used locally; nevertheless the actual number is large. Thus the outstanding points about the Chicago hog market are the large number of animals involved, the large proportion of "directs," and the large and broad demand for local slaughter and packing, which arises from the location there of important plants of the larger national packing companies, as well as of a large number of smaller companies. It is a market which is able to absorb large numbers of any class and grade of hogs.

East St. Louis is a much smaller hog market than Chicago, but ranked second in 1930 and fourth in 1931 among the markets of the country. It draws its hog supply mainly from the southern part of the corn belt. "Direct" receipts are relatively unimportant as regards the market itself, altho the steadily increasing receipts at slaughtering plants across the river in St. Louis has a growing effect on this market. East St. Louis is essentially a shipping market, a large proportion of the hogs marketed there being purchased for shipment to eastern and southern points. The volume of local slaughter is insignificant in comparison with that at Chicago.

Indianapolis is a somewhat smaller market than East St. Louis but ranked eighth in 1930 and seventh in 1931 among the markets of the entire country. It draws its supply largely from Indiana and Illinois. The bulk of the receipts are high-quality butcher hogs. "Directs" are not important in yard receipts but are becoming of in-

creasing importance in shipments to Indianapolis packers. The volume of local slaughter is relatively larger at Indianapolis than at East St. Louis, tho there is also an important shipping demand.

Cincinnati is a still smaller market, ranking tenth among the markets in both 1930 and 1931. Hogs received here come chiefly from Ohio, southern Indiana, Illinois, and Kentucky. Most of them are slaughtered locally.

Summary of Market Characteristics. Summarizing, we find that these four markets rank as follows¹ with respect to size of receipts and shipments, amount of local slaughter, and proportion of total receipts reshipped:

In receipts	In shipments	In local slaughter	In proportion of total receipts reshipped
1. Chicago	1. E. St. Louis	1. Chicago	1. E. St. Louis
2. E. St. Louis	2. Chicago	2. Cincinnati	2. Indianapolis
3. Indianapolis	3. Indianapolis	3. Indianapolis	3. Chicago
4. Cincinnati	4. Cincinnati	4. E. St. Louis	4. Cincinnati

Thus local slaughter is the most important outlet at Chicago and Cincinnati, and shipping sales is the chief method of disposal at East St. Louis, while these two items are more evenly divided at Indianapolis. These facts are of importance in considering the behavior of prices at the different markets. Unless shipping orders are available to absorb a large proportion of the receipts at East St. Louis, the buyers for local killers are in a very strong position. This would be true in less degree at Indianapolis and still less at Chicago and Cincinnati.

COMPARABILITY OF QUOTATIONS AT DIFFERENT MARKETS

In undertaking an analysis of comparative hog prices at the four markets above mentioned the question of comparability of hogs offered for sale is obviously basic. Are the hogs and the trading practices at the four markets similar, or are there essential differences in such things as type, quality, or finish of hogs, or in the grades on which price quotations are based, or in sorting practices, which might account for apparent differences in price?

Methods Used to Measure Comparability. In attempting to answer the above questions each market was visited by the junior author in successive weeks in October, 1930, in January, 1931, and in June, 1931, and the character of the hogs on sale observed on three

¹Based on averages for 1930 and 1931.

successive days—Monday, Tuesday, and Wednesday. National Stock Yards (East St. Louis) was visited the first week; Cincinnati, the second week; Indianapolis, the third week; and Chicago, the fourth. This order was chosen because it was believed that seasonal changes in receipts would appear at the markets in about the same order. Actual dates of observations are given on pages 131 and 132.

October was selected because it gives a good cross-section of receipts of the spring pig crop; January because it shows the typical winter hog receipts; and June because it represents the close of receipts of fall pigs and affords an opportunity to observe the general character of receipts when quality is likely to be generally low.

The procedure adopted was to get into the hog yards as early as the hogs were penned (in January, as early as daylight allowed); to go thru the yards, alley by alley, observing the hogs in each pen and estimating their average weight, weight spread, and grade (including finish and quality). Except in a small proportion of cases, time did not permit going into the pens and stirring up the hogs for detailed inspection. Instead they were observed from the alley, cane-slapping on the pen and tapping the hogs near at hand assisting somewhat in getting the hogs up. In order to check on the weight estimates taken, competent salesmen and buyers were often asked for their opinions regarding probable weights of particular pens of hogs. In the smaller markets considerable time was spent at the scales estimating weights as different lots of hogs came up and checking the estimated weights against actual scale weights.

Sorts were observed wherever opportunity offered, more time naturally being available for such observations at Cincinnati and Indianapolis than at East St. Louis or Chicago, because of the larger area to be covered at the latter markets. Indeed, one has great difficulty in getting thru all four divisions of the Chicago hog yards before hogs move to the scales in sufficient numbers to change the appearance of receipts in sections visited last.

Grades Used and Their Significance. Grade notations were used as follows: (1) *choice*—intended to include both prime and choice grades as formerly suggested by the U. S. Department of Agriculture; (2) *good-to-choice*—for lots containing a mixture of both good and choice hogs; (3) *good*; and (4) *medium*—including both medium and common grades as suggested by the U. S. Department of Agriculture.

Choice hogs are described as follows in "Tentative U. S. Standards for Classes and Grades of Slaughter Barrows and Gilts," issued by the U. S. Department of Agriculture, July 31, 1931: "Choice or finished hogs carry sufficient fatness and firmness, quality and conformation to

yield highest grade standard cuts. Skin is smooth, clean, and free from wrinkles." *Good* hogs are described as "slightly lacking in finish but having sufficient finish, quality, and conformation to indicate the production of good standard cuts." *Medium* hogs are described as "lacking in finish, quality and firmness so as to indicate a fair proportion of standard cuts and usually a low yield of total carcass value." Amplifications of each of these descriptions are given in the publication above referred to.

The principal difference between choice and good hogs is in the degree of finish (fatness) and consequently in dressing percentage. Just where the line would be drawn between the two grades, on foot, is a matter of judgment or opinion on the part of salesmen and of buyers. It tends to vary somewhat with markets, with seasons, and with trade conditions. The two grades of live hogs produce essentially the same grades of dressed products but they yield varying percentages of dressed products. For example, in one test choice and good hogs of approximately 200 pounds live weight gave dressed yields of 79 and 76 percent respectively. At \$5 per hundredweight on foot, the choice hogs showed a dressed cost of \$6.33 per hundredweight; while at \$4.85 on foot the good hogs showed a dressed cost of \$6.38 per hundredweight. At a higher price-level the difference in value would of course be greater. If the same choice hogs were figured at 10 cents a pound on foot, the dressed cost would become 12.66 cents a pound, and the good hogs would have to sell down to 9.62 cents a pound on foot to give the same dressed cost, assuming yields as given above.

This explains why a spread usually appears in quotations which include choice and good hogs in the same price group. At terminal markets, however, the trade has not found it practicable to try to sort choice and good hogs into separate lots, and the two grades are therefore, of necessity, quoted together. Moreover, because of the relatively small differences in value usually existing between the two grades, quoting them together has thus far seemed a satisfactory practice. Within narrow weight-classes the upper figure of the quoted range may be looked on as a quotation on strictly choice hogs and the lower figure as a quotation on good hogs.

Medium hogs yield a lower grade of product in some cuts, particularly in bellies, and there is every reason why they should be quoted separately. Many packers classify medium hogs as distinctly second grade and some do not buy them at all.

It is not assumed that a period of three days on a market, at three different periods during the year, will afford an adequate or complete measure of the character of receipts at that market or of variations

in the character of receipts, but it is believed that the results are sufficiently representative to be of some definite value.

COMPARABILITY OF MARKETS

September and October, 1930. The East St. Louis market (National Stock Yards) was visited on September 29, 30, and October 1; the Cincinnati market on October 6, 7, and 8; the Indianapolis market on October 12, 13, and 14; and the Chicago market October 20, 21, and 22. Mr. D. J. Slater, of the Chicago office of the Division of Livestock, Meats and Wool, Bureau of Agricultural Economics, U. S. Department of Agriculture, assisted in the observations at Chicago.

The percentages reported below as to weight and grade distribution of hogs represent estimates based on observations on all or a large part of the hogs on each market on the days stated and on information obtained from informed market operators.

Market	Proportion of sows included in receipts	Weight distribution excluding sows			Grade distribution excluding sows			
		250 lbs. and up	200-250 lbs.	200 lbs. and down	Choice	Good to choice	Good	Medium
		%	%	%	%	%	%	%
East St. Louis.....	6	3	16	81	10	24	54	12
Cincinnati.....	4	2	30	68	9	26	55	10
Indianapolis.....	5	3	37	60	15	39	40	6
Chicago.....	16	4	46	50	11	30	46	13

Inasmuch as these estimates were made during four successive weeks and covered a period during which the quality of hogs improved steadily, the figures may not be strictly comparable as between the four markets. If it had been possible to check at East St. Louis or at Cincinnati on the same days on which the inspection was made at Chicago, probably higher quality ratings would have been observed.

January and February, 1931. The East St. Louis yards were visited on January 5, 6, and 7; Cincinnati on January 19, 20, and 21; Indianapolis on January 26, 27, and 28; and Chicago, on February 3, 4, and 5. Mr. Slater assisted in the observations at the first three points. The estimates as to the distribution of weights and grades were as follows:

Market	Proportion of sows included in receipts	Weight distribution excluding sows			Grade distribution excluding sows			
		250 lbs. and up	200-250 lbs.	200 lbs. and down	Choice	Good to choice	Good	Medium
		%	%	%	%	%	%	%
East St. Louis.....	3	12	47	41	50	20	21	9
Cincinnati.....	4	14	54	32	55	25	16	4
Indianapolis.....	3	29	36	35	60	19	18	3
Chicago.....	6	48	37	15	44	26	21	9

June, 1931. The East St. Louis market was visited on June 1, 2, and 3; Cincinnati on June 8, 9, and 10; Indianapolis on June 15, 16, and 17; and Chicago on June 22, 23, and 24. The estimates of weight and grade distribution follow:

Market	Proportion of sows included in receipts	Weight distribution excluding sows				Grade distribution excluding sows			
		250 lbs. and up	200-250 lbs.	200 lbs. and down	%	Choice	Good to choice	Good	Medium
	%	%	%	%	%	%	%	%	%
East St. Louis.....	8	5	31	64	42	29	22	7	
Cincinnati.....	8	5	31	64	33	41	20	6	
Indianapolis.....	7	11	36	53	50	31	14	5	
Chicago.....	27	19	44	37	24	34	32	10	

Tentative Conclusions as to Comparability. From the above summaries and from observations made locally the following tentative statements as to the comparability of these four markets may be made:

1. Hog receipts at the four markets are not identical either in type or in quality. There are sufficient differences to influence orders of packers requiring special type, weight, or quality of hogs. There are seasonal variations also, both in weight and in quality. Rated on quality and finish of market receipts, Indianapolis comes first and Chicago last, with no great difference between Cincinnati and East St. Louis. Chicago gets hogs as good as those at any of the other markets but its percentage of lower grades runs much higher during certain seasons. Also Chicago gets a somewhat larger percentage of the type of hogs referred to by some as the meat-type hog than do the other markets studied. Such hogs are definitely gaining in favor with a number of packers. The expansion of direct marketing and the increased number of local livestock markets in the Chicago territory, with their "out" hogs and off-grade hogs usually consigned to the Chicago yards, tend to lower the quality of receipts at that market. The extent to which these lower-quality hogs influence the quotations at Chicago is a matter of interest to all producers, for prices at practically all other selling points are based directly on the Chicago market.

2. Even tho the make-up of the receipts was not identical at each market, the bulk of the hogs graded good or better at all four markets during the periods in which observations were made. In October, 1930, the percentages so graded, not including sows, varied from 87 to 94; in January, 1931, they varied from 91 to 97, and in June, 1931, from 90 to 95. If these percentages had been based on total hog receipts including sows, the good and choice hogs would have represented only 66 percent of the total at Chicago in June. Thus the grades

on which the quotations have been based since June 30, 1930, represent the bulk of hogs of the weight-classes being considered in this study.

3. Heavy hogs made up a small proportion of the receipts (less than 10 percent) at all markets during the October observation period and at East St. Louis and Cincinnati during the June period. It would appear that when prices are based on such small volumes, quotations might be rather nominal and not strictly comparable between markets. The numbers of light- and medium-weight hogs at all markets were adequate, however, during all observation periods to make the quotations readily comparable as between markets. More information on distribution of grades within the respective weight-classes at each market would be desirable.

4. Quotations of average prices on good-to-choice and of top prices on medium- and light-weight hogs can be readily compared at the different markets at all seasons. The degree to which differences in type invalidate the comparisons has not been considered in this study but this factor is believed not to be serious at present.

5. Differences in sorting practices have to be allowed for in making price comparisons between markets. It is difficult to measure statistically the proportion of hogs that will sell at the quoted price and the amount the others will be discounted, but observations made in connection with the collection of the data on comparable weights and grades indicate that there are material differences in sorting practice. Sorting is consistently most severe at Indianapolis, apparently least severe at Cincinnati. The sorting practice at most markets, however, is subject to variation, both seasonal and day-to-day, depending on demand, volume, and quality of receipts and on other local factors. Different buyers on the same market often vary materially in their sorts, even under identical conditions. One may almost say that during much of the year on the Indianapolis market few hogs other than choice sell at the established price and what are designated good hogs according to the proposed government grades would sell only at a discount during such periods. In making price comparisons between markets these differences must be recognized, but it is impossible at this time to state the differential that must be made in order to allow for them.

It must be emphasized that the market observations here reported were a first attempt and that the results are strictly tentative. Shippers would benefit from more complete information on the character of hog receipts at the principal markets and the distribution of receipts as to weight-classes and also as to grades (quality and finish).

PRICE COMPARISONS BETWEEN EAST ST. LOUIS AND CHICAGO

Annual Differences in Prices. The annual differences between hog prices at the Chicago and East St. Louis markets are not large, indicating that shippers who have a choice do not have much to gain from using one as against the other. As is later pointed out, however, these annual differences are very misleading in that they cover up a great deal of short-time variation. Annual averages may have some significance to slaughterers and other buyers who are purchasing every day, as indicating the comparative costs of raw material at different points, but they have little significance to farmers selling hogs on the basis of one particular day's market, which often varies widely from the annual, monthly, or even weekly average.

The comparative location of the two markets explains the small difference noted above. Both markets ship their surplus (the proportion of their receipts not slaughtered locally) into eastern consuming centers at about the same freight rates and with about the same train service, and hence must sell on a direct competitive basis.

Based on price data collected by the U. S. Department of Agriculture the annual differences in favor of East St. Louis for medium-weight hogs were as follows during the years 1920 to 1931:

1920...21 cents	1923... 7 cents	1926...15 cents	1929...2 cents
1921... 6 "	1924...10 "	1927... 7 "	1930...5 "1
1922... 3 "	1925...20 "	1928...10 "	1931...5 "1

The largest margins occurred in years of relatively high prices, that is, in 1920, 1925 and 1926. These margins would probably be reduced if top prices were compared, for all the comparisons for 1930 reported later reveal that average prices were relatively higher at East St. Louis than were top prices.

Seasonal Variation in Price Differences. More or less regular seasonal variation exists in the differences between hog prices at East St. Louis and Chicago (Fig. 2, upper half). From the latter part of December until about the middle of April prices of medium-weight hogs (average of range of daily quotations) during 1926-1930 averaged about 10 cents higher at the more southern market, a definite period of weakness occurring in February and March. After the middle of April the price at East St. Louis declined sharply in relation to Chicago and for about six weeks averaged at, or a little below, the Chicago price. An increase in the difference, coming on the average early in June, carried the price at East St. Louis up to 10 to 15 cents above that at

¹Median of daily differences.

Chicago, where it remained until the latter part of August. Then a decline ensued which, by the middle of September, carried the price down to an average somewhat less than 5 cents above Chicago, where it remained until the early part of December. In December the difference increased again, until by the end of the month the East St. Louis price was about 10 cents above the Chicago price. The periods when East St. Louis prices are most favorable are therefore from the middle of December to the middle of April, and from the early part of June to the latter part of August.

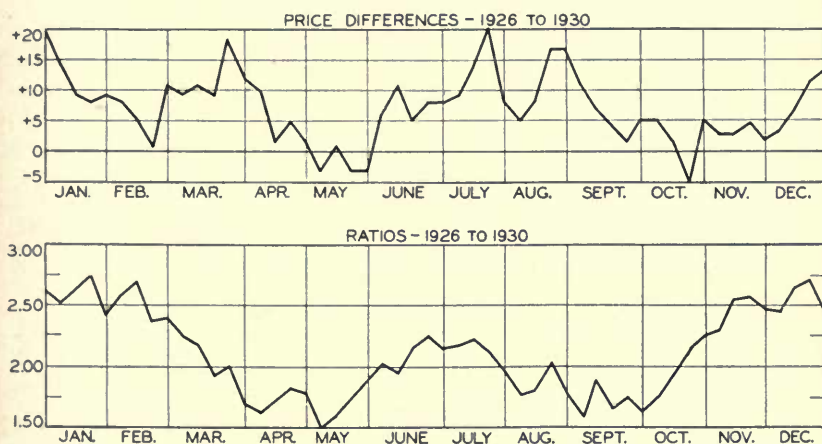


FIG. 2.—AVERAGE RATIOS OF RECEIPTS OF HOGS AT CHICAGO TO RATIOS AT EAST ST. LOUIS AND AVERAGE WEEKLY DIFFERENCES IN PRICES, 1926-1930

(Prices are average of quoted range on medium-weight hogs)

A distinct difference is noticeable in seasonal receipts of hogs at these two markets; receipts tend to be relatively large at Chicago from November thru February and again in June and July. There is less regularity in price differences, altho these tend to follow the differences in receipts with changes in prices tending to lag behind changes in the relative receipts.

Some correlation apparently exists between the variations in the differences in prices between East St. Louis and Chicago and changes in the comparative size of receipts at these two markets. Comparative receipts by weeks for 1926-1930 are shown in Fig. 2 expressed as ratios, the East St. Louis receipts being taken as the base. A high ratio means that East St. Louis receipts were comparatively light, a low ratio the reverse. The comparison reveals distinct differences in the season of receipts. At East St. Louis receipts are comparatively light from the middle of November to the first of March, which is the season of heavy receipts at Chicago. From the latter part of March to the middle of May receipts at East St. Louis increase in relation to

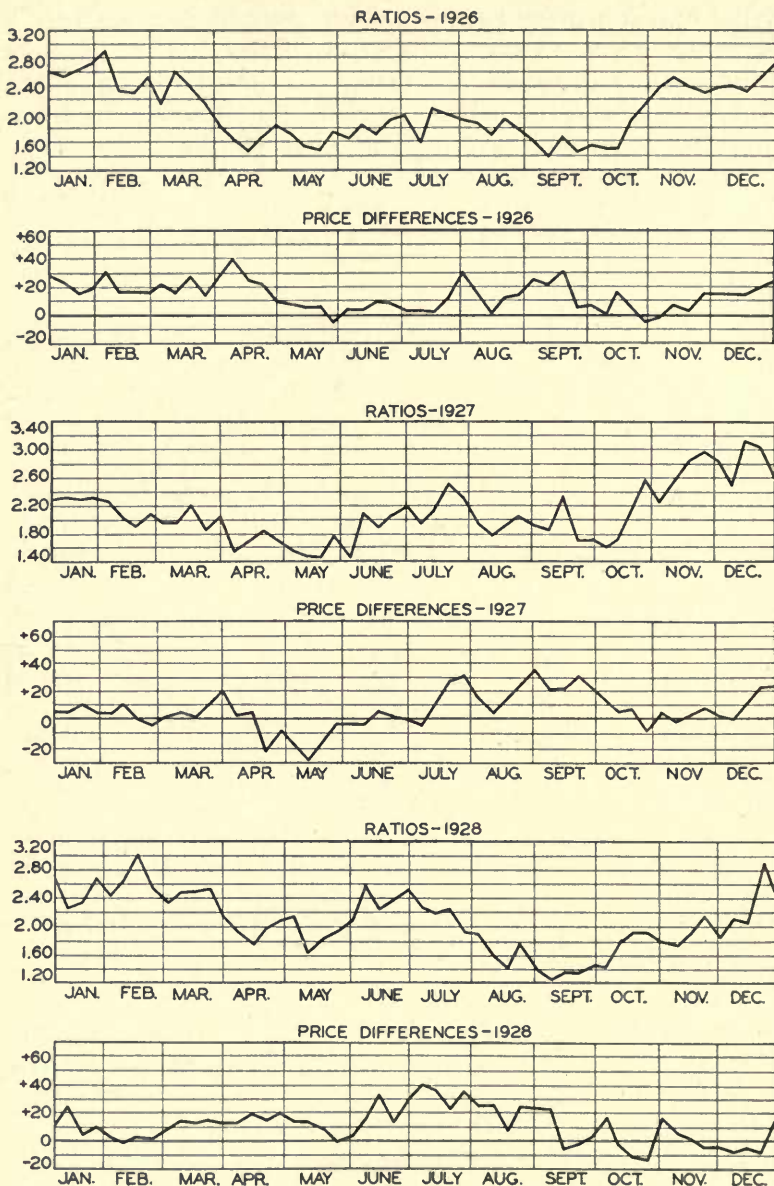


FIG. 3.—RATIOS OF RECEIPTS OF HOGS AT CHICAGO TO RECEIPTS AT EAST ST. LOUIS AND PRICE DIFFERENCES, EAST ST. LOUIS MINUS CHICAGO, BY WEEKS, 1926-1931 (Prices refer to average of quoted range on medium-weight hogs)

(See page 137 for remainder of Fig. 3 and legend)

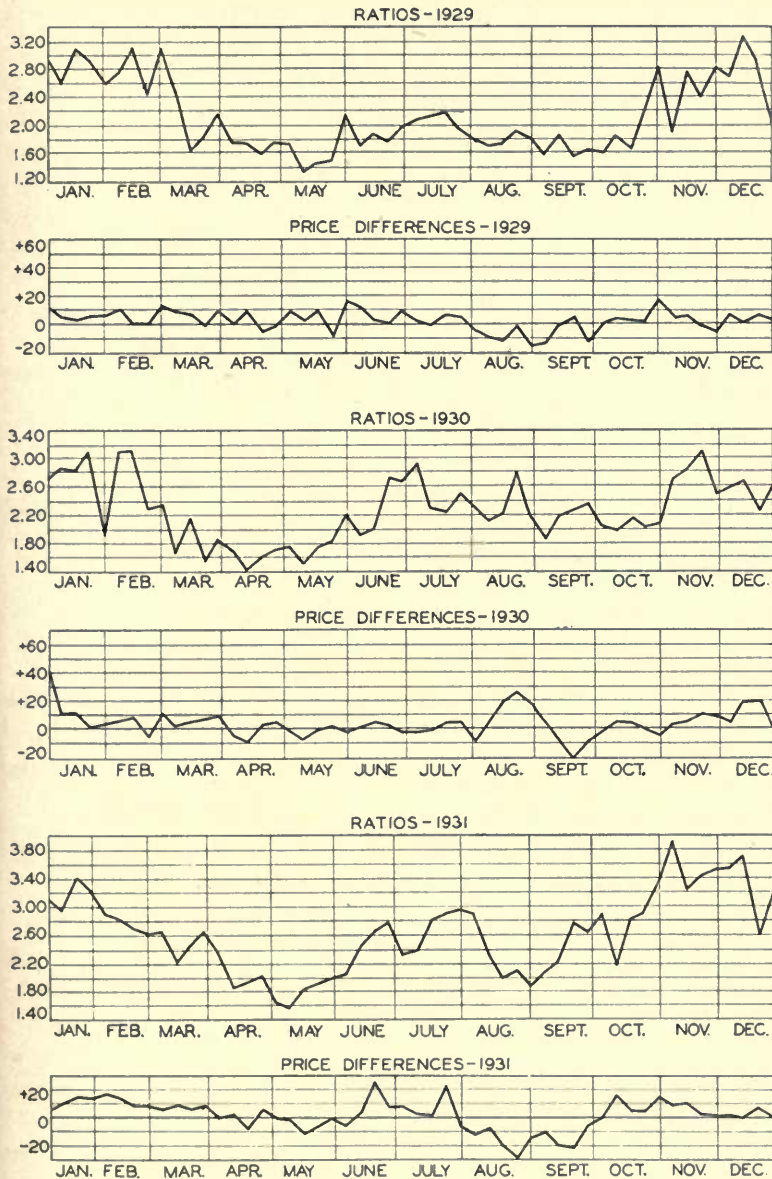


FIG. 3.—Concluded

The receipts-ratios trace very similar patterns in each of the five years but the price differences are not so uniform from year to year. In 1926, 1927, 1928, and the last half of 1930 they were quite similar, but during 1929 and the first half of 1930 the seasonal variation was not so clearly marked.

Chicago, this fact reflecting the earlier marketing of the fall pig crop at the more southern market and the decline in receipts at Chicago after the heavy early-winter runs. During the early summer months receipts decline in importance at East St. Louis but increase again in late summer. East St. Louis does not get the heavy runs of sows, which are a big factor in summer receipts at Chicago, but because of its more southern location it receives an earlier movement from the spring pig crop.

Price changes have tended to lag behind changes in receipts. Receipts at East St. Louis in relation to Chicago began to decline in the spring, three or four weeks before the price difference began to increase. The amount of the lag in the autumn was eight or nine weeks. Probably intervals like these are necessary before St. Louis receipts are reduced or Chicago receipts are increased sufficiently to affect the price relationship between the two markets. The East St. Louis price, it should be noted, was not so low in relation to Chicago during the longer interval in the fall as it was in the spring. Whether it would be possible by proper marketing tactics to bring the East St. Louis price up more quickly after the receipt-ratios begin to decline is a question of considerable interest to stockmen who market at East St. Louis.

Uniformity of Seasonal Variation From Year to Year. The differences discussed above can be looked upon only as very general tendencies, for variations from year to year were considerable and the period covered was only a comparatively brief one of five years. A comparison of price differences for individual years indicates a tendency, however, for St. Louis prices to decline at some time in the spring and again in the fall in relation to Chicago prices.

The ratio of Chicago to East St. Louis receipts and the price differences (East St. Louis minus Chicago) are shown by weeks from 1926 to 1930 in Fig. 3. The receipt-ratios trace a very similar pattern in each of the five years. Chicago receipts are high in relation to those at East St. Louis in the winter months, decline in the spring, rise again in the summer, decline in the late summer or early fall, and rise again in late fall. The reasons for these differences were discussed above.

The seasonal variation in price differences from year to year was not so uniform as differences in receipts. In 1926, 1927, and 1928 they were quite similar, with spring and fall declines corresponding to the changes in ratios of receipts. In 1929 and the first seven months of 1930, however, the usual pattern was not followed; the variation in price differences was less than in the earlier years, and the seasonal

variations were less clearly marked. Beginning in August, 1930, the variability in price differences again became more marked.

Daily Price Differences, 1930. The most conspicuous feature of the daily price differences between East St. Louis and Chicago is their variability. This variability indicates a certain degree of independence in short-time movements at these markets, which is covered up when longer periods are used as a unit of measure. To individual producers this short-time variability is very significant, for they sell their hogs on the basis of single day's markets and not on the basis of weekly, monthly, or yearly averages.

TABLE 1.—NUMBER OF DAYS ON WHICH SPECIFIED DIFFERENCES OCCURRED DAILY BETWEEN EAST ST. LOUIS AND CHICAGO HOG PRICES, 1930¹

E. St. Louis price above (+) or below (-) Chicago price	Light weight (160-200 pounds)		Medium weight (200-250 pounds)	
	Top price	Average price of good to choice ¹	Top price	Average price of good to choice ¹
	Number of days on which specified price difference occurred			
<i>cents</i>				
+45.....	0	1	0	1
+40.....	2	4	1	2
+35.....	1	4	2	1
+30.....	2	11	1	5
+25.....	6	15	4	7
+20.....	11	27	7	17
+15.....	17	38	25	32
+10.....	36	46	29	45
+ 5.....	30	55	28	54
0.....	61	48	50	56
- 5.....	41	33	43	36
-10.....	44	14	46	29
-15.....	29	7	35	9
-20.....	16	3	12	8
-25.....	8	0	16	2
-30.....	0	0	3	1
-35.....	1	0	3	1
-40.....	1	0	0	0
-45.....	0	0	1	0
Average difference ²	0	+5 cents	-5 cents	+5 cents

¹Prior to July 1, medium to choice. ²Median or middle item.

The high degree of variability in the differences between prices at the two markets during 1930 is indicated by the data in Table 1 and Fig. 4, which show the number of days on which certain specified differences occurred. In the top prices of light-weight hogs differences at each 5-cent interval between +20 cents and -20 cents per 100 pounds were of common occurrence, that is, they occurred more than ten times during the year. In the top prices of medium-weight hogs differences ranging from +15 cents to -25 cents for all 5-cent intervals were common. For both weight-classes the range of common occurrence was 40 cents. (The Chicago price was subtracted from the East St. Louis price in each case.)

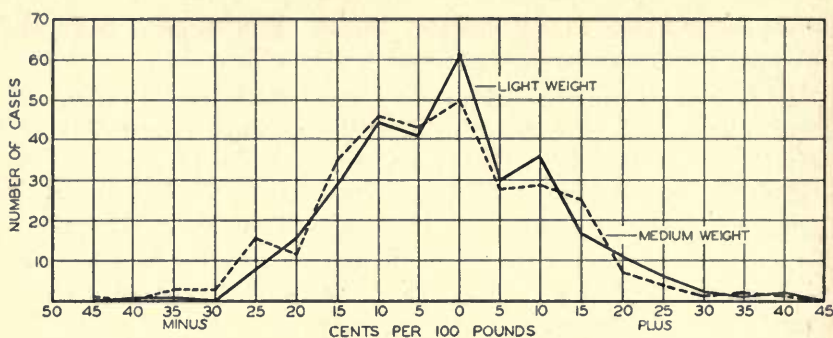


FIG. 4.—FREQUENCY OF DAILY DIFFERENCES BETWEEN TOP PRICES OF HOGS AT EAST ST. LOUIS AND CHICAGO, 1930

For both light- and medium-weight hogs there is a considerable variation on the daily differences, with differences between these markets of fairly common frequency (10 days or more) in 1930, ranging from 204 to -204 for the medium-weight class.

These considerable daily differences illustrate the point made earlier that while all the various hog markets tend to conform to the same general influences and may be looked upon as parts of a single broad market, over shorter periods of time individual markets are subjected to local influences which cause them to diverge.

Average Monthly Differences, 1930. During 1930 no marked differences occurred in the monthly variations between the East St. Louis and Chicago markets measured by median or middle differences (Table 2). For light-weight hogs the top prices at East St. Louis

TABLE 2.—AVERAGE (MEDIAN)¹ DIFFERENCE BETWEEN PRICES OF HOGS AT EAST ST. LOUIS AND CHICAGO BY MONTHS, 1930

Month	Light weight (160-200 pounds)		Medium weight (200-250 pounds)	
	Top price	Average price of good to choice ²	Top price	Average price of good to choice ²
	<i>cents</i>	<i>cents</i>	<i>cents</i>	<i>cents</i>
January.....	0	+10	+10	+5
February.....	+2	+22	0	+10
March.....	-10	+20	-10	+5
April.....	-10	0	-10	-5
May.....	-10	0	-10	0
June.....	-5	+5	-5	0
July.....	-5	+5	-10	0
August.....	+2	+5	+8	+10
September.....	-10	+10	-20	-10
October.....	+5	+10	-5	0
November.....	+10	+10	0	+2
December.....	+10	+12	+10	+15
Year.....	0	+5	-5	+5

¹Middle difference. ²Prior to July 1, medium to choice.

averaged below the prices at Chicago during six months; during one month there was no difference; during five months East St. Louis was the higher market. During the first three-quarters of the year Chicago was the better market in general; during the last quarter, East St. Louis. For medium-weight hogs the top prices at East St. Louis as compared with Chicago were even less favorable than were prices for light-weights. During only three months was East St. Louis the higher of the two markets in top prices for medium-weight hogs.

On the basis of average prices calculated from the range of quoted prices for medium-to-choice hogs before July 1 and for good-to-choice beginning with that date, East St. Louis prices made a more favorable showing than Chicago. The light-weights at East St. Louis averaged better than at Chicago during ten months; during the other two months there was no difference. The medium-weights did not make quite so favorable a showing at East St. Louis in comparison with Chicago as did the light-weights. During six months prices at East St. Louis averaged either equal to or below the prices at the latter market.

The fact that the rise of the average of the quoted range of prices brought East St. Louis into a relatively more favorable position in comparison with Chicago than when top prices were used, indicates a wider range of quoted prices at Chicago than at East St. Louis. Whether this reflects a difference in reporting practice, a difference in the way in which receipts are distributed among the different grades, or a better market for lower grade hogs at East St. Louis cannot be definitely stated. It is clear that an average based on the range has a much less definite meaning than does the top price.

In spite of the tendency for monthly averages to cover up daily variability, they are useful as reflecting general differences in price-level and seasonal variations in these differences.

Influence of Day of Week on Margins. The margin between prices at East St. Louis and Chicago seems to be influenced little or none by the day of the week. To test this, a comparison was made of the daily differences in the prices of medium-weight top hogs at East St. Louis and Chicago for each market day during 1930. The average difference was very similar for each day of the week, being the same except for two days, Wednesday and Saturday, when the margins appeared slightly more favorable to East St. Louis. The median differences (East St. Louis minus Chicago) were as follows: Monday -5 cents; Tuesday -5 cents; Wednesday 0 cents; Thursday -5 cents; Friday -5 cents; Saturday 0 cents. The variations in these differences are not significant. Other results might have been found if comparison had been made for other years.

Day-to-Day Change in Market Level and Differences Between the Markets. No correlation appears to exist between day-to-day variability in hog prices and daily price differences between markets. Differences between markets might be expected to be particularly large on days when the change in the general market price was large, but this does not appear to be true. Differences between markets averaged about as large when price changes were small as when they were large (Table 3).

TABLE 3.—AVERAGE DIFFERENCES IN TOP PRICES OF MEDIUM-WEIGHT HOGS BETWEEN EAST ST. LOUIS AND CHICAGO FOR DAYS WITH CHANGES IN CHICAGO PRICES OF SPECIFIED AMOUNTS DURING DESIGNATED PERIODS

Change in Chicago price from previous day	July to December, 1930		January to June, 1931	
	Number of days	Average differences	Number of days	Average differences
<i>cents</i>		<i>cents</i>		<i>cents</i>
0.....	25	14	37	10
5.....	25	8	24	11
10.....	26	12	9	9
15.....	27	11	20	10
20.....	22	12	14	13
25.....	10	8	19	11
30.....	9	14	0	..
35.....	4	14	1	15
40.....	0	0	1	10

Daily Price Differences, 1926-1929. The same tendency toward variability in the daily price differences between these markets was exhibited in four earlier years (1926-1929) as in 1930 (Table 4). In

TABLE 4.—PERCENTAGE OF DAYS WITH SPECIFIED DIFFERENCES BETWEEN EAST ST. LOUIS AND CHICAGO AVERAGE HOG PRICES,¹ 1926-1930

E. St. Louis price above (+) or below (-) Chicago price	Medium-weight (200-250 pounds)				
	1926	1927	1928	1929	1930
<i>cents</i>					
+65.....	0	(²)	0	0	0
+60.....	0	(²)	(²)	0	0
+55.....	1	(²)	1	1	0
+50.....	1	1	1	(²)	0
+45.....	2	1	2	0	(²)
+40.....	4	1	2	0	1
+35.....	3	4	5	0	(²)
+30.....	7	4	3	1	2
+25.....	11	5	7	3	2
+20.....	12	6	10	5	5
+15.....	12	7	14	9	10
+10.....	12	15	12	12	15
+ 5.....	15	17	10	15	18
+ 0.....	9	14	11	20	18
- 5.....	3	7	10	15	12
-10.....	5	5	5	8	10
-15.....	2	5	4	4	3
-20.....	1	3	3	3	3
-25.....	(²)	2	(²)	1	1
-30.....	0	(²)	0	1	0
-35.....	0	1	0	1	0
-40.....	0	(²)	0	1	0

¹Medium to choice to June 30, 1930; after that, good to choice. ²Less than 1 percent.

fact, variations in the earlier years were even greater than in 1930. The ranges within which daily differences at each 5-cent interval were of common occurrence (occurred 10 or more times a year) were as follows:

1926, from +40 cents to -10 cents, a range of 50 cents
 1927, from +35 cents to -20 cents, a range of 55 cents
 1928, from +35 cents to -20 cents, a range of 55 cents
 1929, from +25 cents to -20 cents, a range of 45 cents
 1930, from +20 cents to -20 cents, a range of 40 cents

Monthly Differences, 1926-1930. The monthly differences in average prices of medium-weight hogs between East St. Louis and Chicago for five years are shown in Table 5. The differences were more distinctly favorable to East St. Louis in earlier years than in either 1929 or 1930. This was particularly true in 1926, when hog prices were relatively high.

TABLE 5.—AVERAGE (MEDIAN) DIFFERENCES BETWEEN AVERAGE PRICES OF HOGS AT EAST ST. LOUIS AND CHICAGO¹ BY MONTHS, 1926-1930

Month	Medium-weight (200-250 pounds)				
	1926	1927	1928	1929	1930
	<i>cents</i>	<i>cents</i>	<i>cents</i>	<i>cents</i>	<i>cents</i>
January.....	+22	+ 5	+10	+ 5	+ 5
February.....	+20	0	0	+ 2	+10
March.....	+25	+ 7	+15	+ 5	+ 5
April.....	+25	0	+15	- 5	- 5
May.....	+ 5	-15	+ 5	+ 5	0
June.....	+ 5	+ 5	+20	+ 5	0
July.....	+ 5	+20	+35	0	0
August.....	+10	+20	+22	-10	+10
September.....	+15	+30	+ 5	-10	-10
October.....	+ 5	+ 7	- 5	+ 5	0
November.....	+ 5	+ 5	0	0	+ 2
December.....	+15	+15	- 5	+ 5	+15
Year.....	+15	+ 5	+10	0	+ 5

¹Medium to choice until June 30, 1930; after that, good to choice.

COMPARISONS BETWEEN INDIANAPOLIS, EAST ST. LOUIS, AND CHICAGO

Daily Price Differences, 1930. The same variability in daily differences was found in 1930 between Indianapolis and East St. Louis as between East St. Louis and Chicago. For light-weight hogs differences in top prices of common occurrence (that is, occurring on 10 or more days of the year) were found in each 5-cent interval from +35 to -10 cents and for medium-weight hogs from +30 to -10 cents, ranges of 45 and 40 cents per 100 pounds respectively (Table 6).

Monthly Differences, 1930. Prices of both medium- and light-weight hogs were definitely higher at Indianapolis than at East St.

TABLE 6.—NUMBER OF DAYS WITH SPECIFIED DAILY DIFFERENCES BETWEEN PRICES OF TOP HOGS AT INDIANAPOLIS AND EAST ST. LOUIS, 1930

Indianapolis price above (+) or below (-) E. St. Louis price	Light weight (160-200 pounds)	Medium weight (200-250 pounds)
<i>cents</i>		
+50.....	1	3
+45.....	2	4
+40.....	4	5
+35.....	16	7
+30.....	12	16
+25.....	29	42
+20.....	30	30
+15.....	41	56
+10.....	59	52
+ 5.....	37	33
0.....	42	27
- 5.....	6	10
-10.....	11	13
-15.....	6	6
-20.....	5	0
-25.....	2	0
-30.....	0	1
-35.....	2	1
-40.....	0	1
Average difference.....	+10 cents	+15 cents

Louis during 1930, the median differences for light- and medium-weight hogs being 10 and 15 cents respectively (Table 7). The averages were higher during every month except two for the light-weights

TABLE 7.—AVERAGE (MEDIAN) DIFFERENCE BETWEEN TOP PRICE OF HOGS AT INDIANAPOLIS AND EAST ST. LOUIS BY MONTHS, 1930

Month	Light weight (160-200 pounds)	Medium weight (200-250 pounds)
<i>cents</i>		
January.....	+10	+10
February.....	+20	+15
March.....	+30	+18
April.....	+25	+25
May.....	+15	+15
June.....	+10	+15
July.....	+10	+ 5
August.....	+10	+ 2
September.....	0	+15
October.....	0	+20
November.....	+ 2	+10
December.....	+10	+ 5
Year.....	+10	+15

and this was true during every month for the medium-weights. The spread in favor of Indianapolis was a little more favorable on the medium-weights than on the light-weights, altho during several months the reverse was true. This relationship, that is, for Indianapolis prices to be higher than East St. Louis prices, is to be expected in view of the more easterly location of the Indiana market on the route of movement of hogs and hog products to the consuming centers. The freight rate on double-deck cars of hogs from East St. Louis to Philadelphia

is 57 cents per 100 pounds; the rate from Indianapolis is 47.5 cents.¹ The difference of 9.5 cents is a little less than the average difference between prices at the two markets. Shorter shipping time and hence less shrinkage would account for a part of the remaining difference.

In view of the fact that prices at Chicago and East St. Louis were about on a parity during 1930, the advantage which the Indianapolis market shows over East St. Louis would apply also to Chicago. The differences between Indianapolis and Chicago for top prices of medium-weight hogs would be approximately as follows for the different months of 1930:

	<i>cents</i>		<i>cents</i>		<i>cents</i>		<i>cents</i>
Jan.....	+20	May....	+ 5	Sept.....	- 5	Year..	+10
Feb.....	+15	June....	+10	Oct.....	+15		
Mar.....	+ 8	July.....	- 5	Nov.....	+10		
Apr.....	+15	Aug.....	+10	Dec.....	+15		

These figures were arrived at by adding (algebraically) the monthly differences between East St. Louis and Chicago and between Indianapolis and East St. Louis. If the differences had been calculated directly they might have been slightly different from those shown above, altho not materially different.

Indianapolis prices on this class of hogs were above Chicago prices except for two months, July and September.

These comparisons indicate the desirability of Illinois stockmen using the more eastern market wherever train service permits and freight rates are in line. With the increasing use of trucks for assembling stock at local points, the area accessible to railroad points where these conditions obtain has been increased considerably in the last few years. Marketing technic is being rapidly adjusted to take advantage of eastern outlets.

In these comparisons no allowance has been made for the more rigorous sorting at Indianapolis. A part or all of the higher price which is indicated for the Indianapolis market may be offset by the larger proportion of hogs that may be sorted out and subjected to discount. Observations on this point are made on page 133. So far as top hogs are concerned, the figures are strictly comparable.

Differences in 1928-1929. The same conditions described above for 1930—that is, for Indianapolis prices to average higher than those at East St. Louis or Chicago and for considerable variability to prevail in the daily margins—held true also in earlier years (Tables 8 and 9). The average monthly price differences (Table 9) suggest that the margin in favor of Indianapolis was larger in 1928 and 1929 than

¹Rates furnished by Transportation Department, Illinois Agr. Assoc., Chicago.

TABLE 8.—PERCENTAGE OF DAYS WITH SPECIFIED DIFFERENCES BETWEEN INDIANAPOLIS AND EAST ST. LOUIS AVERAGE HOG PRICES,¹ 1928-1929

Indianapolis price above (+) or below (-) E. St. Louis price	1928		1929	
	Light weight (160-200 pounds)	Medium weight (200-250 pounds)	Light weight (160-200 pounds)	Medium weight (200-250 pounds)
<i>cents</i>				
+80.....	..	..	..	(?)
+75.....	(?)	1	..	..
+70.....	(?)	1	..	(?)
+65.....	1	2	..	(?)
+60.....	0	2	1	0
+55.....	1	3	2	1
+50.....	1	4	5	2
+45.....	3	4	7	2
+40.....	2	6	9	7
+35.....	8	8	8	12
+30.....	11	10	12	9
+25.....	13	14	16	12
+20.....	13	8	12	18
+15.....	15	15	11	16
+10.....	14	11	8	8
+ 5.....	8	7	5	6
0.....	7	2	3	4
- 5.....	2	2	1	2
-10.....	1	(?)	(?)	..
-15.....	0	..	(?)	..
-20.....	0	..	..	..
-25.....	(?)	..	..	..
-30.....	0	..	..	..
-35.....	(?)	..	..	..
Average difference.....	+20 cents	+25 cents	+25 cents	+20 cents

¹Medium to choice. ²Less than 1 percent.TABLE 9.—AVERAGE (MEDIAN) DIFFERENCE BETWEEN AVERAGE HOG PRICES¹ AT INDIANAPOLIS AND EAST ST. LOUIS BY MONTHS, 1928-1929

Month	1928		1929	
	Light weight (160-200 pounds)	Medium weight (200-250 pounds)	Light weight (160-200 pounds)	Medium weight (200-250 pounds)
<i>cents</i>				
January.....	+15	+25	+20	+20
February.....	+15	+45	+20	+35
March.....	+15	+35	+35	+32
April.....	+10	+15	+40	+25
May.....	+10	+20	+25	+15
June.....	+15	+15	+25	+20
July.....	+15	+20	+25	+15
August.....	+30	+15	+25	+15
September.....	+40	+55	+35	+25
October.....	+20	+30	+25	+20
November.....	+15	+10	+20	+15
December.....	+25	+15	+20	+20
Year.....	+20	+25	+25	+20

¹Medium to choice.

in 1930. This apparently larger margin may be due to the fact that for the two earlier years average prices are being compared instead of prices on top hogs, as in 1930. The ranges within which daily price differences between these two markets at each 5-cent interval were of common occurrence (occurred 10 or more times a year) were as follows:

Light weight

1928, from +45 cents to 0, a range of 45 cents

1929, from +50 cents to 0, a range of 50 cents

Medium weight

1928, from +55 cents to +5 cents, a range of 50 cents

1929, from +40 cents to 0, a range of 40 cents

COMPARISONS BETWEEN CINCINNATI, INDIANAPOLIS,
AND EAST ST. LOUIS

Daily Price Differences, 1930. The daily differences between hog prices at Cincinnati and Indianapolis were also quite variable. For light-weight hogs the range of common occurrence for differences in top prices was from +40 cents to -5 cents per 100 pounds and for medium-weight hogs from +35 cents to -10 cents, the Indianapolis price being subtracted from the Cincinnati price (Table 10).

TABLE 10.—NUMBER OF DAYS WITH SPECIFIED DAILY DIFFERENCES BETWEEN PRICES OF TOP HOGS AT CINCINNATI AND INDIANAPOLIS, 1930

Cincinnati price above (+) or below (-) Indianapolis price	Light weight (160-200 pounds)	Medium weight (200-250 pounds)
<i>cents</i>		
+50.....	3	3
+45.....	9	1
+40.....	14	5
+35.....	17	15
+30.....	27	20
+25.....	50	47
+20.....	21	38
+15.....	50	49
+10.....	54	46
+ 5.....	11	21
0.....	23	34
- 5.....	12	10
-10.....	8	10
-15.....	4	6
-20.....	0	0
-25.....	2	..
Average difference.....	+15 cents	+15 cents

Monthly Differences, 1930. Prices of both light- and medium-weight top hogs were definitely higher at Cincinnati than at Indianapolis in 1930 (Table 11). Relatively more of the hogs at the Ohio market are slaughtered locally than at the Indiana market. Cincinnati being farther removed from the centers of hog production, would be expected to have the higher market. During ten months in 1930 light-weights were higher at Cincinnati than at Indianapolis, and during eleven months the same was true for medium-weights.

In view of the margin between the Indianapolis and East St. Louis markets it is clear that the Cincinnati prices were also higher than those at East St. Louis. The actual differences for top prices of medium-weight hogs, calculated by adding the margins between In-

TABLE 11.—AVERAGE (MEDIAN)¹ DIFFERENCE BETWEEN TOP PRICE OF HOGS AT CINCINNATI AND INDIANAPOLIS BY MONTHS, 1930

Month	Light weight (160-200 pounds)	Medium weight (200-250 pounds)
	<i>cents</i>	<i>cents</i>
January.....	+15	+15
February.....	+10	+15
March.....	0	+12
April.....	0	0
May.....	+10	+10
June.....	+20	+15
July.....	+15	+25
August.....	+15	+20
September.....	+35	+10
October.....	+30	+10
November.....	+25	+15
December.....	+25	+30
Year.....	+15	+15

¹Middle difference.

dianapolis and East St. Louis and between Cincinnati and Indianapolis, were as follows in 1930:

	<i>cents</i>		<i>cents</i>		<i>cents</i>		<i>cents</i>
Jan.....	+25	May....	+25	Sept.....	+25	Year..	+30
Feb.....	+30	June....	+30	Oct.....	+30		
Mar.....	+30	July....	+30	Nov.....	+25		
Apr.....	+25	Aug.....	+22	Dec.....	+35		

It is to be observed that these margins were quite uniform from month to month. Cincinnati is indicated to be the most desirable market (for hogs of this quality) for areas from which freight rates and shipping connections are favorable.

Differences in 1928-1929. Average prices in 1928 and 1929 did not show so much margin in favor of Cincinnati as did the top prices in 1930 (Table 12). In fact in those two years there was no difference, on the average, in the prices of light-weight hogs and only a

TABLE 12.—AVERAGE (MEDIAN)¹ DIFFERENCE BETWEEN AVERAGE PRICES OF HOGS² AT CINCINNATI AND INDIANAPOLIS BY MONTHS, 1928-1929

Month	1928		1929	
	Light	Medium	Light	Medium
	<i>cents</i>	<i>cents</i>	<i>cents</i>	<i>cents</i>
January.....	+10	+15	0	+10
February.....	+20	+20	+20	+10
March.....	+10	+20	0	+5
April.....	+17	+20	-10	+5
May.....	0	+25	-5	+10
June.....	-5	+12	+5	+10
July.....	-10	+15	+10	+20
August.....	-25	-5	-5	+15
September.....	-30	-5	-15	+5
October.....	-5	0	0	+5
November.....	-5	+5	+5	+15
December.....	+5	+10	+15	+15
Year.....	0	+10	0	+10

¹Middle difference. ²Medium to choice.

10-cent difference in the medium-weight class. In the latter part of 1928 and for several months in 1929 the margin on light-weights was in favor of Indianapolis. The more rigorous sorting at Indianapolis must be recognized in interpreting these comparisons.

TABLE 13.—PERCENTAGE OF DAYS WITH SPECIFIED DIFFERENCES BETWEEN AVERAGE PRICES OF HOGS¹ AT CINCINNATI AND INDIANAPOLIS, 1928-1929

Cincinnati prices above (+) or below (-) Indianapolis prices	1928		1929	
	Light weight (160-200 pounds)	Medium weight (200-250 pounds)	Light weight (160-200 pounds)	Medium weight (200-250 pounds)
<i>cents</i>				
+55.....	..	(?)	..	..
+50.....	(?)	..	..	(?)
+45.....	1	(?)	(?)	..
+40.....	1	(?)	..	(?)
+35.....	2	4	(?)	1
+30.....	2	6	2	6
+25.....	7	9	4	8
+20.....	6	14	6	13
+15.....	8	15	11	15
+10.....	10	12	12	16
+ 5.....	11	12	13	19
0.....	12	8	12	8
- 5.....	7	8	12	7
-10.....	5	5	10	4
-15.....	6	3	7	2
-20.....	6	1	3	(?)
-25.....	5	2	5	1
-30.....	2	1	2	(?)
-35.....	1	..	1	(?)
-40.....	2	..	(?)	..
-45-150.....	5	..	..	..

¹Medium to choice. ²Less than 1 percent.

There was the same wide range, however, in the daily differences in the earlier years (Table 13) as in 1930, the ranges of common occurrence in these differences being as follows:

Light weight

1928, from +25 cents to -25 cents, a range of 50 cents

1929, from +25 cents to -25 cents, a range of 50 cents

Medium weight

1928, from +35 cents to -15 cents, a range of 50 cents

1929, from +30 cents to -10 cents, a range of 40 cents

COMPARISONS BETWEEN MARKETS IN 1931

East St. Louis and Chicago. For both medium- and light-weight hogs the median daily difference between prices of top hogs at East St. Louis and Chicago was zero. The same marked variability in daily differences occurred in 1931 as in the earlier years. The ranges of common occurrence for both medium- and light-weight hogs were from +20 cents to -25 cents, the Chicago price being subtracted from the East St. Louis price. The seasonal variation in these differences was similar to that observed for earlier years. The median daily differences by months in 1931 follow:

	(Cents per 100 pounds)											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Medium weight....	+10	0	-5	-10	-15	+5	+5	-25	-20	-5	+5	+2
Light weight.....	+10	0	-5	-10	-10	+5	0	-20	-15	+10	+10	+5

The usual weakness of East St. Louis prices in relation to Chicago prices in the spring and again in the late summer is to be noted.

Indianapolis and East St. Louis. Again, prices in 1931 were distinctly higher at Indianapolis than at East St. Louis, and hence higher than at Chicago. The median daily differences between the two markets for both light- and medium-weight hogs were 10 cents per 100 pounds. The variations in daily differences, however, were considerable. The ranges of common occurrence in these differences were from +25 cents to -15 cents for light-weight hogs and from +25 cents to -10 cents for medium-weights, the East St. Louis price being subtracted from the Indianapolis price in each case.

No definite seasonal variation is to be noted in these differences. The median daily differences by months in 1931 follow:

	(Cents per 100 pounds)											
	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Medium weight....	-5	+10	+15	+5	+15	+5	0	+15	+15	+8	+10	+5
Light weight.....	+10	+20	+20	+15	+15	+5	+8	+10	0	+5	+5	+5

INFLUENCE OF FASTER TRAIN SCHEDULES ON INTERMARKET PRICE DIFFERENCES

Early in 1932 the railroads put into effect much faster schedules for the trains that move livestock from western to eastern markets and consuming centers. Altho the freight rates, the principal factor causing intermarket price differences, were not reduced, a shortening of transportation time should tend to reduce some of the other costs incidental to shipping livestock, and hence to lower slightly the margins that have been established on the basis either of intermarket shipping costs or of the comparative cost of shipping from two markets to various eastern slaughtering points. The widening of the territory from which a market may draw livestock within a specified shipping period under these new schedules may also alter somewhat the price relationships between markets.

SOME REASONS WHY PRICES OF FARM PRODUCTS ARE SO VARIABLE

A general characteristic of prices of most farm products is variability. The markets are nervous, fluctuating up and down. Livestock markets are no exception; indeed, variability is even more marked

with them than with some other farm products. Some of the reasons for variability are: the open-market method of establishing prices from day to day, which permits short-time influences to operate in such a way that stability is never established for any length of time; the large number of individual producers and consequent lack of coordination in production and marketing; the uncertainty regarding the total number available for marketing, because of the large number of producers and the disturbing influences of the weather on production plans; and the marked sensitivity of prices of farm products to changes in demand, whether as a result of business conditions or of other factors. The uncertainty regarding supplies of livestock is even more marked than in regard to supplies of crops after crops have passed their critical season of production, for livestock is produced and marketed throughout the year instead of harvested at a single season.

As already noted, not only is there variability in the general level of hog prices but there is variability also in the margins between the prices on different markets on the same day. The general hog market is made up of a series of separate but interrelated markets. Of first importance are the central markets, within each of which prices for a particular weight and grade tend to be reasonably uniform. The markets at these important centers tend to be interrelated and price changes on each of them to be similar, but this intermarket correlation is not perfect, local conditions causing considerable divergence.

Various factors probably contribute to price divergences among related markets. One factor is that of season; the changes that occur in relative volume of receipts at the different markets from season to season cause changes in price relationships. But after such seasonal influences are allowed for, there remains a great deal of variability which can be accounted for only on the basis of localized demand influences and of lack of correlation in the day-to-day changes in receipts on the different markets.

SUGGESTIONS AS TO METHODS OF REDUCING INTERMARKET VARIATION

It is obvious that so much variation in prices between markets is undesirable. A certain degree of variability—probably a considerable amount—is necessary in the general level of hog prices to move the variable supplies of a perishable product into consumption in a market which is characterized by wide fluctuations in demand. But inasmuch as the hogs all come out of the same general national supply and are

consumed in the same national market, it would seem that excessive fluctuation in the margins between different markets could be avoided. Some tentative suggestions for doing this are outlined below:

1. If selling agencies on the different markets should aim to sell at levels determined by national rather than local influences, some of the present fluctuations might be smoothed out. Rather complete intermarket information, on which such a plan would depend, is now quite generally available, but a high degree of coordination between the sales policies of agencies operating in different markets would have to be developed. Some system of coordinating the movement of hogs from the country points would also be helpful, but the development of such a system would be difficult because of the large number of people involved. Of course no plan would operate always to sustain prices, but the aim of such a coordinated sales policy would be to effect a gradual and orderly and more or less uniform decline between markets at times of increasing receipts or decreasing demand, and to avoid the sharp breaks caused by weakness at some particular spot in the market structure. The further aim would be to obtain the highest price that would use up the supplies coming forward, and to maintain all markets in proper relation to each other. Absolute rigidity in intermarket differences would of course be impossible because local differences in supply caused by differences in season of production and by local variation in demand would have to be met by altering price differentials, but some of the extreme differences could probably be avoided.

2. An increase in the practice of making shipping-point sales might also have a unifying effect provided a well-coordinated sales policy and system of communication were developed between the selling agencies. By "shipping-point sales" reference is made to sales at country points to buyers for slaughtering agencies rather than to sales to country livestock buyers. When stock is sold at country points, the sellers have more freedom as to time of sale than after the stock is shipped to a terminal market, and there is not the same necessity for price changes in order to clear the supplies on a particular market. Stock can be fed into market outlets according to the strength of the bids coming from various channels.

This statement is not to be construed, however, as an endorsement of present methods of direct selling. It merely points out one of the possible advantages of that method when, and if, proper coordination of country-point selling agencies becomes effective. To date such coordination of local markets has not been generally developed. Without such coordination direct selling at many country points results in

further decentralization of livestock selling operations. To the same degree, naturally, it strengthens the position of well-organized buying agencies.

SUMMARY AND CONCLUSIONS

This study reports a comparison of the differences in hog prices on the Chicago, East St. Louis, Indianapolis, and Cincinnati markets. Comparisons are made covering the years 1926 to 1931, altho the differences for 1930 are most extensively analyzed. The basic price data were obtained from the market reports issued by the U. S. Department of Agriculture.

In order to check on the comparability of the data each of the markets under consideration was visited three times between September, 1930, and June, 1931, and the character of the hogs on each noted and compared. In the price comparisons daily differences were calculated and compared.

As to the comparability of data from the different markets the following statements may be made:

1. Based on quality and finish of hogs received, Indianapolis would rate first and Chicago last, with little difference between Cincinnati and East St. Louis.
2. At all four markets during the periods for which observations were made, a large percentage of the hogs graded good or better.
3. At certain seasons heavy hogs constituted such a small percentage of total receipts as to make comparisons of quotations for that weight-class questionable. The volume of light- and medium-weight hogs was sufficiently large to lead to the conclusion that a comparison of prices of these weight-classes is warranted.
4. Quotations based on good-to-choice can be compared with more certainty than those based on medium-to-choice. The basis for the government market reporting was changed to good-to-choice on July 1, 1930.
5. Differences in the severity of sorting must be recognized in making price comparisons. Of the four markets Indianapolis is most severe in this respect and Cincinnati least exacting.

As to price comparisons the following statements may be made:

1. Ranked in the order of prices, Cincinnati comes first, Indianapolis second, and there is no great difference between Chicago and

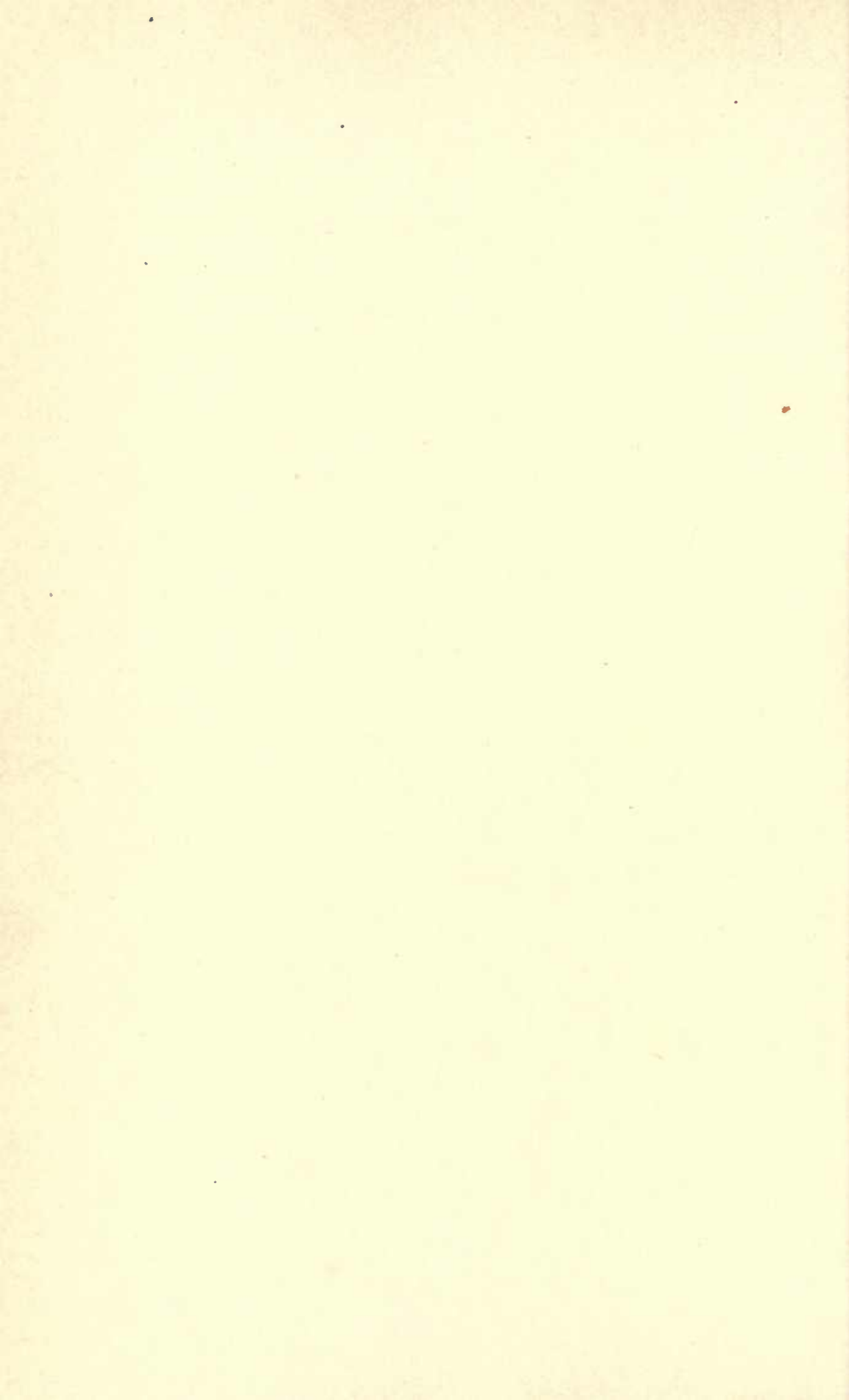
East St. Louis. Geographical location with reference to producing areas and consuming centers explains this ranking.

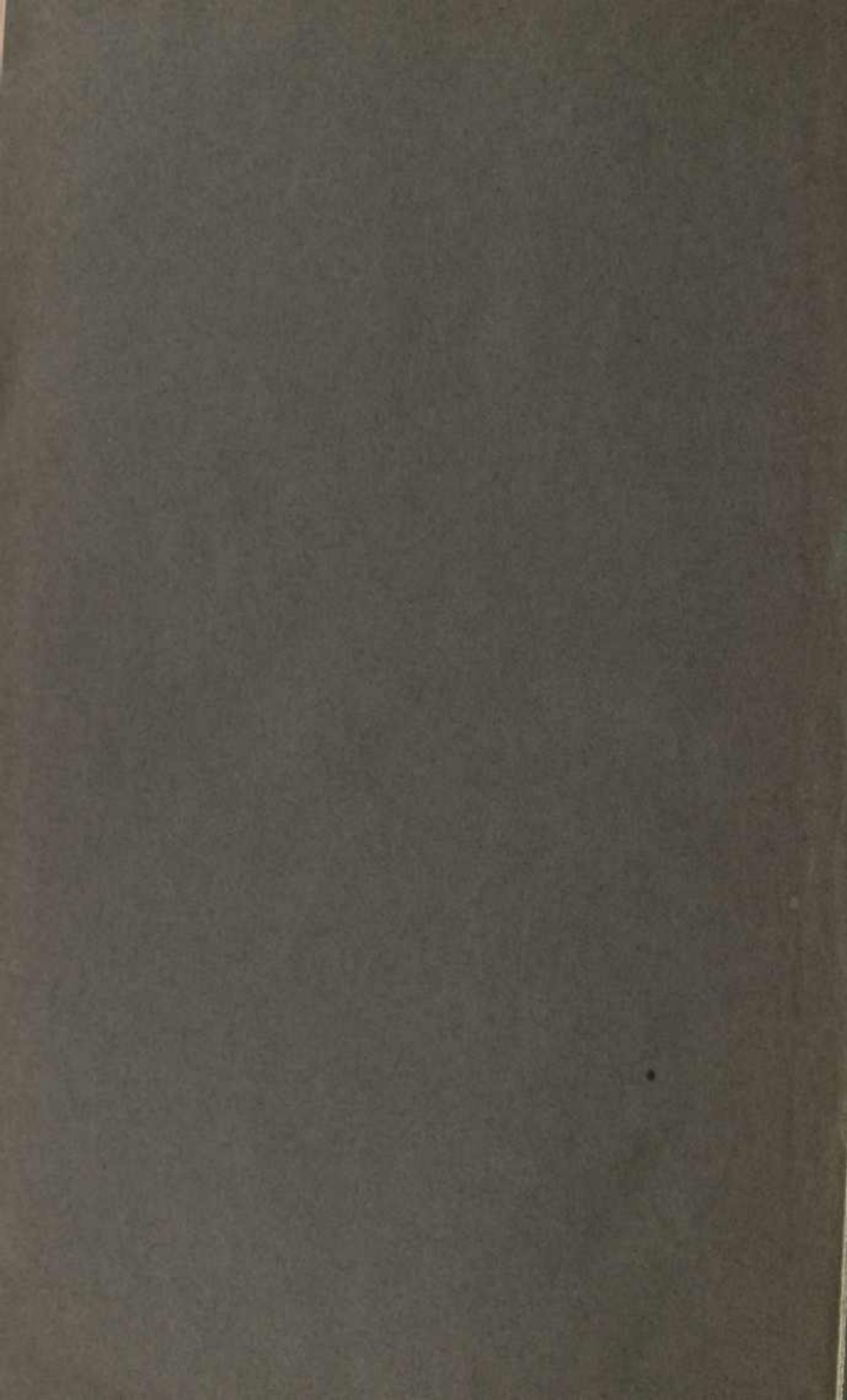
2. A great deal of variability exists in the daily price differences between all four markets, indicating that each of them is subject to local influences from day to day.

3. A distinct seasonal variation exists in price differences between East St. Louis and Chicago, prices at the more southern market being low in relation to Chicago in the spring months and again in the late summer and early fall, and higher at other seasons of the year. This seasonal variation in price differences is correlated with seasonal differences in the receipt of hogs at the two markets. Because of their more southern location farmers in East St. Louis territory have their spring pigs ready to market earlier in the year and raise relatively more fall pigs than do farmers who market in Chicago.

4. No definite seasonal variation was noted in the difference between prices at East St. Louis and Indianapolis, or between Indianapolis and Cincinnati.

Some tentative suggestions concerning the problem of reducing intermarket variations include: (1) greater efforts of selling agencies to recognize national rather than local influences in selling, and the co-ordination of the selling policies of affiliated sales agencies operating on different markets; (2) more coordination in directing the flow of livestock from country points.





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