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IB 423 (1924)

USDA TECHNICAL BULLETINS

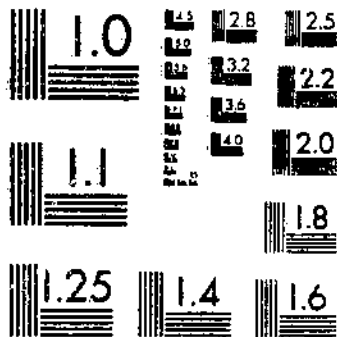
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FLUCTUATIONS IN PRICES OF COTTON FUTURES CONTRACTS

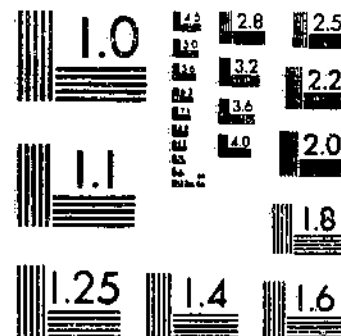
HOWELL, E. D.

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UNITED STATES DEPARTMENT OF AGRICULTURE
WASHINGTON, D. C.

FLUCTUATIONS IN PRICES OF COTTON
FUTURES CONTRACTS

By L. D. HOWELL, *senior agricultural economist, Division of Cotton Marketing, Bureau of Agricultural Economics*¹

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INTRODUCTION

A rule limiting fluctuations of prices of cotton futures contracts in any one day to 3 cents a pound was established by the New York Cotton Exchange on August 27, 1917. The reason given for the action was "to avoid abnormal fluctuations of price caused by conditions created by the European war and injurious speculation incident thereto."² Because of unsettled price conditions in 1918, the Secretary of Agriculture recommended that cotton futures exchanges further limit changes in prices of cotton futures contracts by narrowing the range of daily fluctuations to 2 cents a pound. This recommendation was accepted by the cotton exchanges in the United States and put into effect on October 4, 1918, and these limits have been maintained ever since.

The rules limiting fluctuations in prices provide that trades for future delivery in any specified month shall not be made during any one day at prices more than 2 cents per pound above or below the closing bid price of cotton for the same delivery on the preceding business day. Nor shall trades for future delivery in any specified month be made during any day at prices more than 2 cents per pound above the lowest or more than 2 cents per pound below the highest price for that month on that day.³ This rule does not apply after the 15th of any month to trades for delivery during that month.

The study, the results of which are presented herewith, was made to determine the extent and distribution of actual daily and weekly fluctuations in cotton futures prices.

¹ Credit is due Arthur W. Palmer for general supervision and helpful suggestions, and coworkers for assistance in tabulating the data and in the preparation of the charts.

² NEW YORK COTTON EXCHANGE. BYLAWS AND RULES * * *. amendment 9, rule 30. Ed. 20, p. 122. 1919.

³ NEW ORLEANS COTTON EXCHANGE. CHARTER, CONSTITUTION, BYLAWS, AND RULES * * *. Futures rules, rule 1-A. 1931.

NEW YORK COTTON EXCHANGE. CHARTER, BYLAWS, AND RULES * * *. Rule 25. Ed. 25, p. 193-194. 1930.

CHICAGO BOARD OF TRADE. RULES AND REGULATIONS * * *. Cotton rule 542. 1931.

METHOD AND SCOPE

For the purpose of the study, a period of 16 years was taken, extending from August 1, 1917, to August 1, 1933. The time covered by this study represents a wide range of conditions, and includes periods of rising and of declining prices, of extremely high and extremely low price levels, of war time and of peace time, and of various degrees of prosperity and depression.

The price data presented are confined to those for New York cotton futures contracts.¹ Observations and data available indicate, however, that fluctuations in prices of cotton futures contracts on the New York, New Orleans, and Chicago exchanges generally move closely in line with each other, and it is believed that the data on fluctuations of cotton prices on the New York Cotton Exchange are fairly typical of those for the other two exchanges.

Prices of contracts for delivery during the nearest active month not in process of maturing² were used. For instance, the prices used in July, August, and September were for the contracts for October delivery; in October and November, those for December delivery; in December, those for January delivery; in January and February, those for March delivery; in March and April, those for May delivery; and in May and June, those for July delivery. The daily number of price changes for contracts for delivery during the different active months and other information indicate that the volume of trading in contracts for delivery during the nearest active month not in process of maturing was relatively great as compared with the volume of trading in other months, and it is believed that the fluctuations in the prices used may be considered fairly typical of fluctuations in prices of contracts for delivery in other months.

Fluctuations in prices of contracts during the month of their maturity were also calculated for comparison with those for other months.

The daily ranges in prices of contracts above and below the lowest price of the closing range for the same month on the preceding business day were calculated. The ranges in price fluctuations during the day and during the week were also tabulated and are summarized in the tables and charts presented in this bulletin.

DAILY FLUCTUATIONS IN PRICES

The data on prices of New York futures contracts for the nearest active month not in process of maturing were summarized for the period 1917-18 to 1932-33, inclusive. The results show that the range in these prices during the day equaled or exceeded 2 cents per pound only 19 times, or about 0.4 percent of the time, during this 16-year period (table 1). A range in prices of 2 cents per pound during the day has been reached only 15 times since limits of 2 cents per pound were established by the exchange on October 4, 1918. Prices of contracts during the day rose 2 or more cents per pound above the closing price on the previous day only 6 times, or about 0.1 percent of the time, during this period (table 2). Prices of contracts during the day fell 2 or more cents per pound below the closing price on the previous day only 6 times, or about 0.1 percent of the time, during this period (table 3).

¹ Data were obtained from daily market reports of the New York Cotton Exchange.

² Futures contracts for delivery during a specified month mature during that month and may be discharged by delivering and receiving the cotton any day in that month. Notice of intention to deliver must be given 5 business days before the cotton is delivered.

TABLE 1.—Distribution by number and percentage of days on which they occurred, of the range in prices ¹ of New York cotton futures contracts, by price-level groups, 1917-18 to 1932-33

Range during day (points) ²	Trading days		Days when the price level ³ was—													
			Below 10 cents		10 to 14.99 cents		15 to 19.99 cents		20 to 24.99 cents		25 to 29.99 cents		30 to 34.99 cents		35 cents and above	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-0	298	6.3	146	22.8	74	11.2	64	5.6	13	1.3	1	0.1				
10-10	1,037	21.9	288	45.1	245	37.0	341	29.7	138	13.6	18	2.7	8	2.0	1	0.4
20-29	963	20.3	144	22.0	175	26.5	328	28.5	201	20.2	62	9.3	39	9.9	14	6.2
30-39	667	14.1	44	6.9	86	13.0	179	15.6	186	18.7	99	14.9	43	10.9	30	13.3
40-49	500	10.6	12	1.9	41	6.2	95	8.3	154	15.4	105	15.4	59	14.9	36	16.0
50-59	329	6.9	2	.3	14	2.0	53	4.6	86	8.6	76	11.4	49	12.4	40	21.7
60-69	261	5.5	1	.1	13	2.0	32	2.8	69	6.9	80	12.0	44	11.1	22	9.8
70-79	204	4.3	1	.1	5	.8	20	1.7	53	5.3	67	10.0	34	8.6	24	10.6
80-89	116	2.4			3	.5	13	1.1	20	2.0	42	6.3	26	6.6	12	5.4
90-99	97	2.1	1	.1	3	.5	5	.4	24	2.4	31	4.6	23	5.8	10	4.4
100-109	63	1.3			1	.1	5	.4	12	1.2	16	2.4	20	5.1	9	4.0
110-119	59	1.2			1	.1	6	.5	10	1.0	20	3.0	16	4.0	6	2.7
120-129	27	.6					2	.2	8	.8	9	1.4	5	1.3	3	1.3
130-139	27	.6	1	.1	1	.1			8	.8	14	2.1	8	2.0		
140-149	21	.4							5	.5	9	1.4	6	1.5	1	.4
150-159	18	.4							6	.6	5	.7	5	1.3	2	.9
160-169	11	.2					2	.2	1	.1	3	.5	4	1.0		
170-179	8	.2					2	.2	2	.2	2	.3	1	.2	1	.4
180-189	10	.2							2	.2	5	.7			3	1.3
190-199	4	.1							2	.2	1	.1			1	.4
200 and above	19	.4					2	.2	6	.5	5	.7	6	1.4	1	.4
Total	4,739	100.0	640	100.0	662	100.0	1,149	100.0	998	100.0	668	100.0	396	100.0	226	100.0

¹ Prices are for contracts for delivery in the nearest active month not in process of maturing.

² 100 points=1 cent.

³ Price level for this purpose is the closing price per pound on the previous trading day.

TABLE 2.—Distribution by number and percentage of days on which they occurred, of daily fluctuations in prices¹ of New York cotton futures contracts above the closing price on the previous day, by price-level groups, 1917-18 to 1932-33

Range during day (points) ²	Trading days		Days when the price level ³ was—													
			Below 10 cents		10 to 14.99 cents		15 to 19.99 cents		20 to 24.99 cents		25 to 29.99 cents		30 to 34.99 cents		35 cents and above	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-9	1,872	39.5	385	1.2	333	50.3	499	43.5	349	35.0	159	23.8	96	24.3	51	22.5
10-19	959	20.2	157	24.6	177	26.7	278	24.2	174	17.5	89	13.4	52	13.2	32	14.2
20-29	652	13.8	63	9.8	83	12.5	174	15.1	157	15.7	92	13.8	53	13.4	30	13.3
30-39	384	8.1	19	3.0	32	4.8	83	7.2	96	9.0	80	12.0	43	10.9	37	16.4
40-49	309	6.5	7	1.1	19	2.9	47	4.1	44	4.4	40	6.0	18	4.6	15	6.6
50-58	158	3.3	5	.8	10	1.5	28	2.3	21	2.1	42	6.3	29	7.3	16	7.1
60-69	125	2.6			3	.5	14	1.2	21	2.1	17	2.5	17	4.3	7	3.1
70-79	81	1.3	2	.3			4	.3	14	1.4	10	2.8	11	2.8	4	1.8
80-89	55	1.2	1	.1			6	.5	14	1.4	17	2.5	7	1.8	4	1.8
90-99	41	.9			3	.5	2	.2	8	.8	12	1.8	7	1.8	4	1.8
100-109	44	.9	1	.1	2	.3	4	.3	9	.9	12	1.8	12	3.0	4	1.8
110-119	8	.2					1	.1	1	.1	3	.5		.5	1	.4
120-129	6	.1							5	.5	1	.1				
130-139	20	.4					1	.1	6	.6	7	1.1	6	1.5		
140-149	12	.3					5	.4	1	.1	1	.1	4	1.0	1	.4
150-159	7	.2							2	.2	4	.6			1	.4
160-169	2	(⁴)					2	.2								
170-179	8	.2							4	.4	3	.5	1	.2		
180-189	6	.1					1	.1	1	.1	4	.6				
190-199	4	.1					1	.1	1	.1	1	.1	1	.2		
200 and above	6	.1					1	.1	1	.1	2	.3	2	.4		
Total	4,739	100.0	640	100.0	692	100.0	1,149	100.0	998	100.0	668	100.0	396	100.0	226	100.0

¹ Prices are for contracts for delivery in the nearest active month not in process of maturing.

² 100 points=1 cent.

³ Price level for this purpose is the closing price per pound on the previous trading day.

⁴ Less than 0.1 percent.

TABLE 3.—Distribution by number and percentage of days on which they occurred, of daily fluctuations in prices¹ of New York cotton futures contracts below the closing price on the previous day, by price-level groups, 1917-18 to 1932-33

Range during day (points) ²	Trading days		Days when the price level ³ was—													
			Below 10 cents		10 to 14.99 cents		15 to 19.99 cents		20 to 24.99 cents		25 to 29.99 cents		30 to 34.99 cents		35 cents and above	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-9.....	2,037	43.0	403	63.0	342	51.7	542	47.2	354	35.5	217	32.5	124	31.3	55	24.4
10-19.....	1,630	21.7	162	25.3	172	26.0	297	25.7	226	22.7	98	14.7	42	10.0	33	14.6
20-29.....	604	12.7	54	8.4	69	10.5	155	13.5	156	15.6	87	13.0	47	11.9	39	15.9
30-39.....	325	6.9	13	2.0	35	5.3	68	5.9	83	8.3	53	7.9	43	10.8	39	13.3
40-49.....	225	4.7	4	.6	17	2.6	28	2.4	59	5.9	66	9.9	36	9.1	15	6.7
50-59.....	156	3.3	2	.3	14	2.1	24	2.1	42	4.2	33	4.9	27	6.8	14	6.2
60-69.....	102	2.2			7	1.0	11	1.0	24	2.4	28	4.2	17	4.3	15	6.7
70-79.....	69	1.5			2	.3	11	1.0	14	1.4	22	3.3	15	3.8	5	2.2
80-89.....	47	1.0			2	.3	7	.6	11	1.1	14	2.1	8	2.0	6	2.7
90-99.....	39	.8			1	.1	1	.1	10	1.0	15	2.0	9	2.3	6	2.7
100-109.....	30	.6	1	.2			1	.1	7	.7	11	1.7	6	1.5	3	1.3
110-119.....	18	.4			1	.1	2	.2			8	1.2	7	1.8		
120-129.....	15	.3							5	.5	3	.5	3	.8	4	1.8
130-139.....	8	.2							2	.2	1	.1	3	.8		
140-149.....	11	.2	1	.2					1	.1	5	.7	4	1.0		
150-159.....	5	.1					2	.2			1	.1	1	.2	1	.4
160-169.....	5	.1							3	.3	2	.3				
170-179.....	3	.1														
180-189.....	2	.1											2	.5	1	.4
190-199.....	2	.1									1	.1			1	.4
200 and above.....	6	.1							1	.1	2	.3	2	.5	2	.8
Total.....	4,739	100.0	640	100.0	662	100.0	1,149	100.0	998	100.0	668	100.0	396	100.0	226	100.0

¹ Prices are for contracts for delivery in the nearest active month not in process of maturing.

² 100 points=1 cent.

³ Price level for this purpose is the closing price per pound on the previous trading day.

⁴ Less than 0.1 percent.

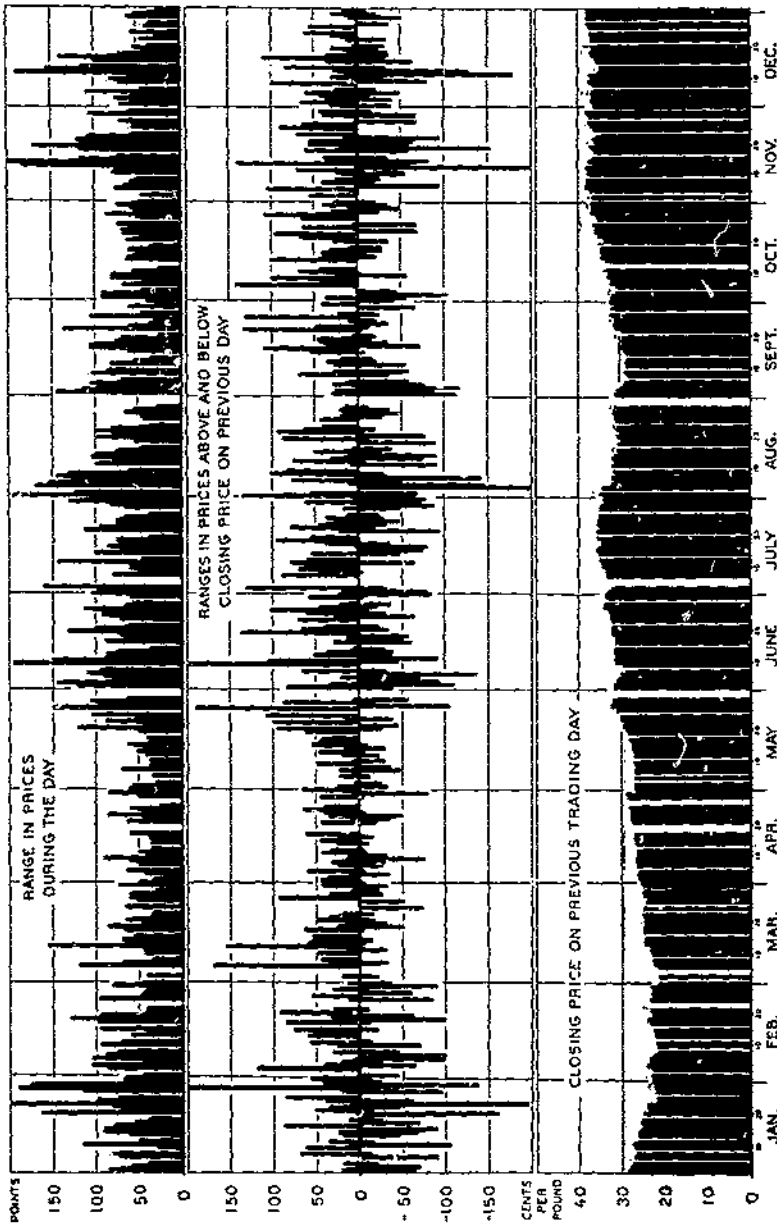


FIGURE 1.—RANGES IN PRICES DURING THE DAY, RANGES IN PRICES ABOVE AND BELOW THE CLOSING PRICES ON THE PREVIOUS TRADING DAY, AND THE CLOSING PRICES ON THE PREVIOUS TRADING DAY, OF NEW YORK COTTON FUTURES CONTRACTS BOUGHT AND SOLD PRIOR TO THE MONTH OF THEIR MATURITY, IN 1919. The range in prices during the day and also the fluctuations in prices above and below the closing price on the previous day were relatively great when prices were high.

An examination of the data presented in tables 1, 2, and 3 shows that the extent of fluctuations in prices of futures contracts varied directly with the prices⁶ of cotton. For example, when cotton prices were below 10 cents per pound, the range in prices during the day amounted to 0.50 cent per pound or less than 1 percent of the time; but when prices were 25 to 30 cents per pound, the range

⁶ Price used for this purpose is the closing price per pound on the previous trading day.

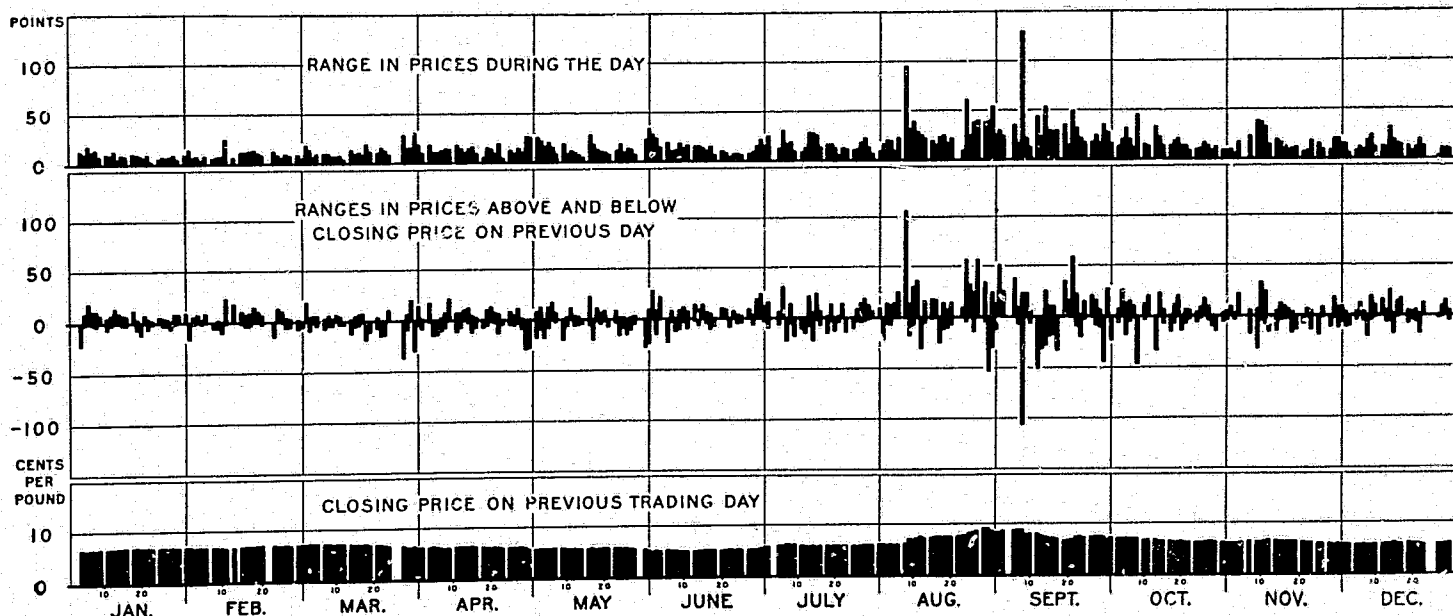


FIGURE 2.—RANGES IN PRICES DURING THE DAY, RANGES IN PRICES ABOVE AND BELOW THE CLOSING PRICES ON THE PREVIOUS TRADING DAY, AND THE CLOSING PRICES ON THE PREVIOUS TRADING DAY, OF NEW YORK COTTON FUTURES CONTRACTS BOUGHT AND SOLD PRIOR TO THE MONTH OF THEIR MATURITY, IN 1932.

The range in prices during the day and fluctuations in prices above and below the closing price on the previous day were relatively narrow when the price level was low.

in prices during the day amounted to 0.50 cent per pound or more about 58 percent of the time. The data presented in figures 1 and 2 show that fluctuations in prices of futures contracts during the day were much greater in 1919, when prices were relatively high, than in

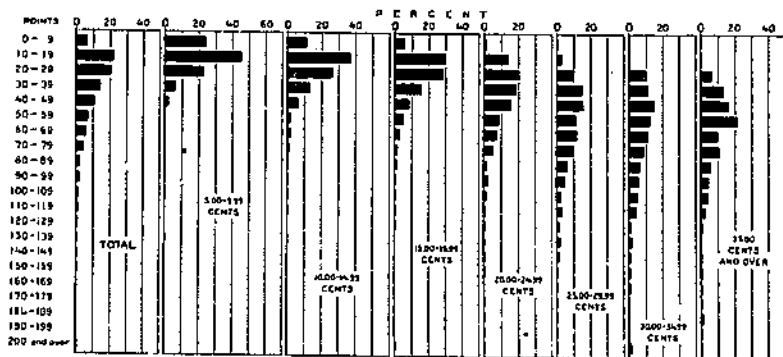


FIGURE 3.—DISTRIBUTION OF DAILY RANGES IN PRICES PER POUND OF NEW YORK COTTON FUTURES, FOR CONTRACTS BOUGHT AND SOLD PRIOR TO THE MONTH OF THEIR MATURITY, BY PRICE-LEVEL GROUPS, 1917-33.

Daily ranges in cotton futures prices for contracts bought and sold prior to the month of their maturity varied widely, and the proportion of the time these ranges were relatively wide increased considerably from the lower to the higher price-level groups.

1932, when prices were relatively low. This does not mean, however, that the differences in extent of daily fluctuations were due solely to differences in price level, for other conditions in the market may have contributed to these differences. An examination of figures 3 to 5,

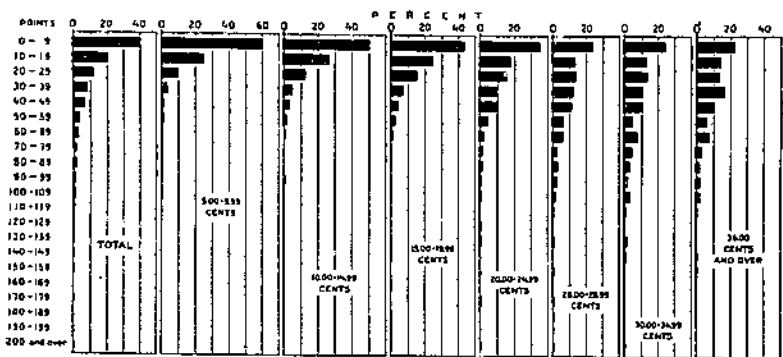


FIGURE 4.—DISTRIBUTION OF DAILY RANGES IN PRICES PER POUND OF NEW YORK COTTON FUTURES ABOVE THE CLOSING PRICE ON THE PREVIOUS BUSINESS DAY, FOR CONTRACTS BOUGHT AND SOLD PRIOR TO THE MONTH OF THEIR MATURITY, BY PRICE-LEVEL GROUPS, 1917-33.

Daily ranges in cotton futures prices above the closing price on the previous business day, for contracts bought and sold prior to the month of their maturity, varied considerably, and the proportion of the time the ranges were relatively wide increased materially from the lower to the higher price-level groups.

inclusive, shows that the range in prices during the day and the fluctuations in prices above and below the closing price on the previous day increased progressively from the lower to the higher price-level groups.

Data on prices of contracts purchased and sold during the month of their maturity show that the range in prices during the day equalled or exceeded 2 cents per pound only five times, or about 0.3 percent of the time (table 4). These prices rose during the day 2 or more cents

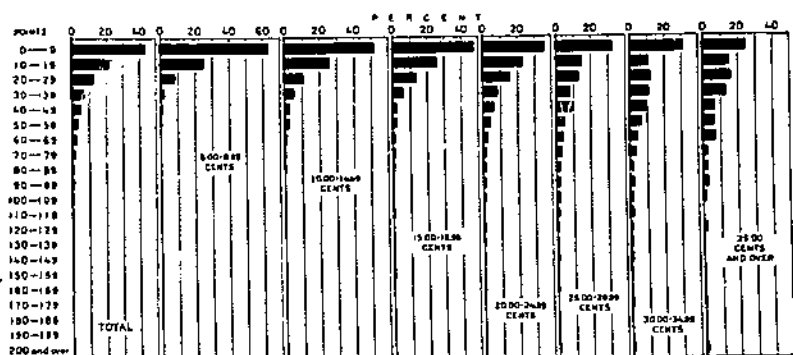


FIGURE 5.—DISTRIBUTION OF DAILY RANGES IN PRICES PER POUND OF NEW YORK COTTON FUTURES BELOW THE CLOSING PRICE ON THE PREVIOUS BUSINESS DAY, FOR CONTRACTS BOUGHT AND SOLD PRIOR TO THE MONTH OF THEIR MATURITY, BY PRICE-LEVEL GROUPS, 1917-33.

Daily ranges in cotton futures prices below the closing price on the previous business day for contracts bought and sold prior to the month of their maturity varied considerably, and the proportion of the time these ranges were relatively wide increased materially from the lower to the higher price-level group.

per pound above the closing price on the previous day only three times, or about 0.2 percent of the time (table 5), and fell below the closing price on the previous day 2 or more cents per pound only three times, or about 0.2 percent of the time (table 6). These fluctuations

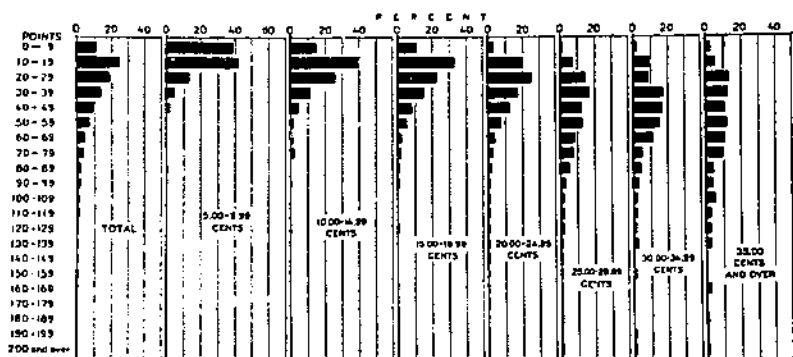


FIGURE 6.—DISTRIBUTION OF DAILY RANGES IN PRICES PER POUND OF NEW YORK COTTON FUTURES, FOR CONTRACTS BOUGHT AND SOLD DURING THE MONTH OF THEIR MATURITY, BY PRICE-LEVEL GROUPS, 1917-33.

Daily ranges in prices of cotton futures contracts bought and sold during the month of their maturity also varied widely, and the proportion of the time the ranges were relatively wide increased considerably from the lower to the higher price-level groups.

in prices during the day did not equal or exceed 2 cents per pound at any time when cotton prices were below 25 cents per pound.

The data presented in tables 4, 5, and 6 show that the extent of the fluctuations in prices of contracts during the month of their

maturity also varied directly with the level of cotton prices. For example, when cotton prices were below 10 cents per pound, the range in fluctuations in prices during the day did not exceed 0.50 cent per

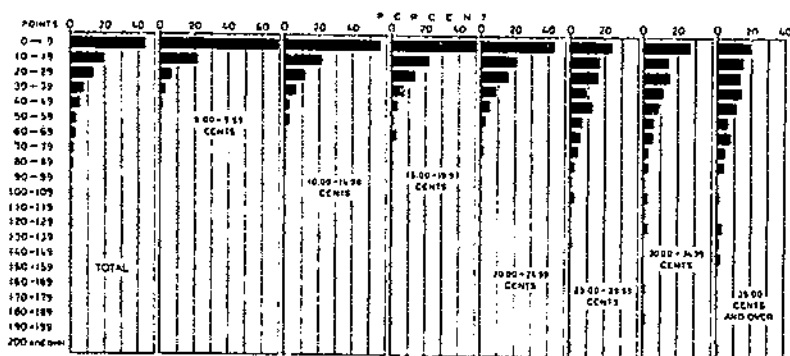


FIGURE 7.—DISTRIBUTION OF DAILY RANGES IN PRICES PER POUND OF NEW YORK COTTON FUTURES ABOVE THE CLOSING PRICE ON THE PREVIOUS BUSINESS DAY, FOR CONTRACTS BOUGHT AND SOLD DURING THE MONTH OF THEIR MATURITY, BY PRICE-LEVEL GROUPS, 1917-33.

Prices of cotton futures contracts bought and sold during the month of their maturity varied considerably above the closing price on the previous business day, and the proportion of the time these variations were relatively wide increased materially from the lower to the higher price-level groups.

pound at any time during the period 1917-18 to 1932-33, inclusive. When cotton prices were from 25 to 30 cents per pound, however, the range in prices during the day exceeded 0.50 cent per pound about 47

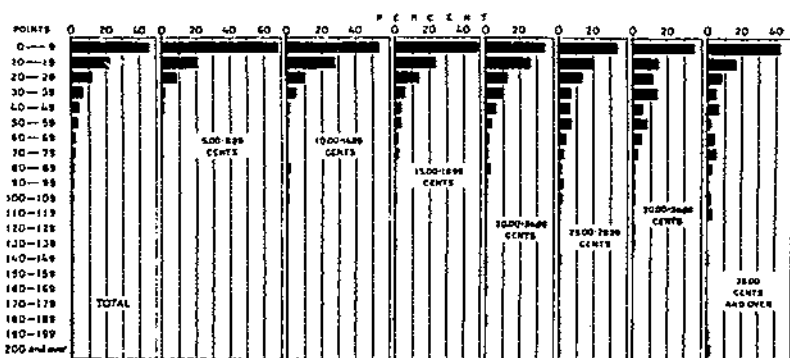


FIGURE 8.—DISTRIBUTION OF DAILY RANGES IN PRICES PER POUND OF NEW YORK COTTON FUTURES BELOW THE CLOSING PRICE ON THE PREVIOUS BUSINESS DAY, FOR CONTRACTS BOUGHT AND SOLD DURING THE MONTH OF THEIR MATURITY, BY PRICE-LEVEL GROUPS, 1917-33.

Prices of cotton futures contracts bought and sold during the month of their maturity varied considerably below the closing price on the previous business day, and the proportion of the time these variations were relatively wide increased materially from the lower to the higher price-level groups.

percent of the time. The data shown in tables 4, 5, and 6 are presented graphically in figures 6 to 8, inclusive.

TABLE 4.—Distribution by number and percentage of days on which they occurred, of daily ranges in prices of New York cotton futures contracts, during the month of their maturity, by price-level groups, 1917-18 to 1932-33

Range during day (points) ¹	Trading days		Days when the price level ² was—													
			Below 10 cents		10 to 14.99 cents		15 to 19.99 cents		20 to 24.99 cents		25 to 29.99 cents		30 to 34.99 cents		35 cents and above	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-9.....	200	11.0	101	38.0	37	14.7	43	10.4	9	2.8	4	1.4	3	1.7	3	2.5
10-19.....	451	24.8	109	41.9	98	39.0	136	33.0	65	20.3	21	7.5	16	9.2	6	5.0
20-29.....	346	19.0	34	13.1	65	25.9	93	22.6	82	25.6	41	14.6	15	8.6	16	13.2
30-39.....	251	13.8	12	4.6	28	11.2	62	15.7	56	17.5	48	17.2	30	17.3	15	12.4
40-49.....	166	9.2	4	1.5	11	4.4	33	8.0	41	12.8	35	12.5	29	16.7	13	10.7
50-59.....	123	6.8			3	1.2	21	5.1	23	7.2	36	12.9	26	15.0	14	11.0
60-69.....	77	4.2				.8	8	1.9	12	3.7	23	8.2	19	10.9	13	10.7
70-79.....	59	3.2			4	1.6	6	1.5	8	2.5	21	7.5	8	4.6	12	9.0
80-89.....	35	1.9					3	.7	6	1.9	14	5.0	7	4.0	5	4.1
90-99.....	27	1.5			1	.4	5	1.2	4	1.2	8	2.9	5	2.9	4	3.3
100-109.....	17	.9							3	.9	5	1.8	3	1.7	6	5.0
110-119.....	16	.9			1	.4			3	.9	6	2.1	3	1.7	3	2.5
120-129.....	15	.8			1	.4	2	.5	2	.6	5	1.8	2	1.1	3	2.5
130-139.....	10	.6			1	.4			1	.3	2	.8	4	2.3	3	2.5
140-149.....	5	.3							2	.6	3	1.1				
150-159.....	4	.2							1	.3	1	.4	2	1.1		
160-169.....	5	.3							1	.3	1	.4			3	2.5
170-179.....	2	.1							1	.3	1	.4				
180-189.....	2	.1									1	.4			1	.8
190-199.....	2	.1							1	.3			1	.6		
200 and above.....	5	.3									3	1.1	1	.6	1	.8
Total.....	1,818	100.0	260	100.0	251	100.0	412	100.0	321	100.0	270	100.0	174	100.0	121	100.0

¹ 100 points=1 cent.

² Price level for this purpose is the closing price per pound on the previous trading day.

TABLE 5.—Distribution by number and percentage of days when they occurred, of daily fluctuations in prices of New York cotton futures contracts above the closing price on the previous day, during the month of their maturity, by price-level groups, 1917-18 to 1932-33

Range during day (points) ¹	Trading days		Days when the price level ² was—													
			Below 10 cents		10 to 14.99 cents		15 to 19.99 cents		20 to 24.99 cents		25 to 29.99 cents		30 to 34.99 cents		35 cents and above	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-9	802	44.1	179	68.8	141	56.1	205	49.8	139	43.2	67	24.0	47	27.3	24	19.8
10-19	355	19.5	56	21.5	53	21.1	90	21.8	66	20.6	47	16.8	25	14.5	18	14.9
20-29	236	13.0	16	6.2	28	11.2	55	13.4	51	15.9	44	15.8	26	14.9	16	13.2
30-39	138	7.6	6	2.3	15	6.0	29	7.0	27	8.4	24	8.6	20	11.5	17	14.1
40-49	98	5.4	2	.8	5	2.0	13	3.2	16	5.0	34	12.2	15	8.6	13	10.8
50-59	53	2.9			6	2.4	4	1.0	8	2.5	18	6.5	10	5.7	7	5.8
60-69	46	2.5			1	.4	10	2.4	2	.6	15	5.4	9	5.2	9	7.4
70-79	26	1.4	1	.4			1	.2	4	1.3	11	3.9	4	2.3	5	4.1
80-89	17	1.0			1	.4	2	.5			6	2.1	4	2.3	4	3.3
90-99	4	.2							1	.3	2	.7	1	.6		
100-109	13	.7					1	.2	2	.6	5	1.8	4	2.3	1	.8
110-119	6	.3			1	.4	2	.5	1	.3	1	.4	1	.6		
120-129	8	.4							1	.3			4	2.3	3	2.5
130-139	4	.2							1	.3	2	.7			1	.8
140-149	4	.2							1	.3					2	1.7
150-159	3	.2							1	.3						
160-169																
170-179	2	.1											2	1.1		
180-189	1	.1							1	.3						
190-199	2	.1											2	1.1		
200 and above	1	.1									1	.4				
	3	.2									2	.7			1	.8
Total	1,818	100.0	260	100.0	251	100.0	412	100.0	321	100.0	279	100.0	174	100.0	121	100.0

¹ 100 points=1 cent.² Price level for this purpose is the closing price per pound on the previous trading day.

TABLE 6.—Distribution by number and percentage of days when they occurred, of daily fluctuations in prices of New York cotton futures contracts below the closing price on the previous trading day, during the month of their maturity, by price-level groups, 1917-18 to 1952-53

Range during day (points) †	Trading days		Days when the price level † was—													
			Below 10 cents		10 to 14.99 cents		15 to 19.99 cents		20 to 24.99 cents		25 to 29.99 cents		30 to 34.99 cents		35 cents and above	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-9	833	45.8	178	68.5	135	53.8	200	48.6	112	34.9	95	34.0	62	35.6	51	42.1
10-19	406	22.3	54	20.8	70	27.9	97	23.5	85	26.5	54	19.3	26	14.9	20	16.5
20-29	210	11.5	22	8.5	25	9.9	56	13.6	40	12.5	37	13.2	20	11.5	10	8.2
30-39	120	6.5	4	1.5	12	4.8	23	5.6	32	10.0	19	6.8	24	13.8	6	5.0
40-49	72	4.0	2	.7	3	1.2	12	2.9	19	5.9	17	6.0	11	6.3	8	6.6
50-59	58	3.2			1	.4	12	2.9	10	3.1	19	6.8	14	8.0	2	1.7
60-69	32	1.8					4	1.0	5	1.6	10	3.6	8	4.6	5	4.1
70-79	27	1.5					6	1.5	4	1.2	7	2.5	4	2.3	6	5.0
80-89	17	.9			3	1.2			7	2.2	3	1.1	1	.6	3	2.5
90-99	11	.6			1	.4			2	.6	6	2.1	1	.6	1	.8
100-109	10	.5			1	.4	1	.2	1	.3	4	1.5	1	.6	2	1.7
110-119	4	.2									1	.4			3	2.5
120-129	1	.1											1	.6		
130-139	2	.1					1	.2					1	.6		
140-149	5	.3							1	.3	3	1.1			1	.8
150-159	1	.1									1	.4				
160-169	1	.1							1	.3						
170-179																
180-189	3	.2							2	.6	1	.4				
190-199	2	.1									1	.4			1	.8
200 and above	3	.2									1	.4			2	1.7
Total	1,818	100.0	260	100.0	251	100.0	412	100.0	321	100.0	279	100.0	174	100.0	121	100.0

† 100 points=1 cent.

‡ Price level for this purpose is the closing price per pound on the previous trading day.

The limits of 2 cents per pound specified by the rules and regulations of the cotton exchanges were established at a time when the level of cotton futures prices was about 32 cents per pound. When put into effect, these limits represented about 6 percent of the prices of futures contracts. Since then prices of cotton futures contracts have varied from below 5 cents per pound to above 42 cents per pound, and the limits of 2 cents per pound have represented from less than 5 to more than 40 percent of the prices of the contracts. Since the data (tables 1 to 6) showed that fluctuations in prices during the day were greater when cotton prices were relatively high than when they were relatively low, these data were further analyzed (table 7) as a means of indicating roughly whether the changes in level of cotton prices were associated with corresponding proportional changes in daily fluctuations in prices. For this purpose, graduated limits equal to about 6 percent of the prices of contracts were used.

The data presented in table 7 show the number of times and the proportion of the time these graduated limits were exceeded during the period 1917-18 to 1932-33. Some irregularities are noted but, with the exceptions of the extreme price-level groups, the proportion of the time these limits were exceeded did not vary widely from one price-level group to another. This indicates that changes in price level of cotton futures contracts were generally associated with corresponding proportional changes in fluctuations in prices during the day.

TABLE 7.—Number of times and proportion of the time that the range in prices of New York cotton futures contracts during the day and the fluctuations in these prices above and below the closing price on the previous trading day exceeded specified limits, by price-level groups,¹ 1917-18 to 1932-33

Price level ¹ (cents per pound)	Graduated limit ²	Contracts for the nearest active month not in process of maturing						Contracts traded in during the month of their maturity							
		Days	Number of times and proportion of time graduated limit was exceeded by—						Days	Number of times and proportion of time graduated limit was exceeded by—					
			Price range during day		Decline below close on previous day		Rise above close on previous day			Price range during day		Decline below close on previous day		Rise above close on previous day	
			Number	Percent	Number	Percent	Number	Percent		Number	Percent	Number	Percent	Number	Percent
Below 10.....	50	640	6	0.9	4	0.6	9	1.4	260	0	0.0	0	0.0	1	0.4
10-14.99.....	80	662	9	1.4	4	.6	5	.8	251	3	1.2	5	2.0	2	.8
15-19.99.....	110	1,149	14	1.2	4	.3	12	1.0	412	2	.5	1	.2	2	.5
20-24.99.....	140	998	23	2.3	5	.5	10	1.0	321	6	1.9	4	1.2	2	.6
25-29.99.....	170	688	13	1.9	4	.6	10	1.5	279	5	1.8	3	1.1	3	1.1
30-34.99.....	200	396	6	1.5	2	.5	2	.5	174	1	.6	0	.0	0	.0
35 and above.....	230	226	0	.0	0	.0	0	.0	121	0	.0	0	.0	0	.0

¹ Price level for this purpose is the closing price per pound on the previous trading day.

² Limit equal to approximately 6 percent of the prices of contracts.

³ 100 points=1 cent.

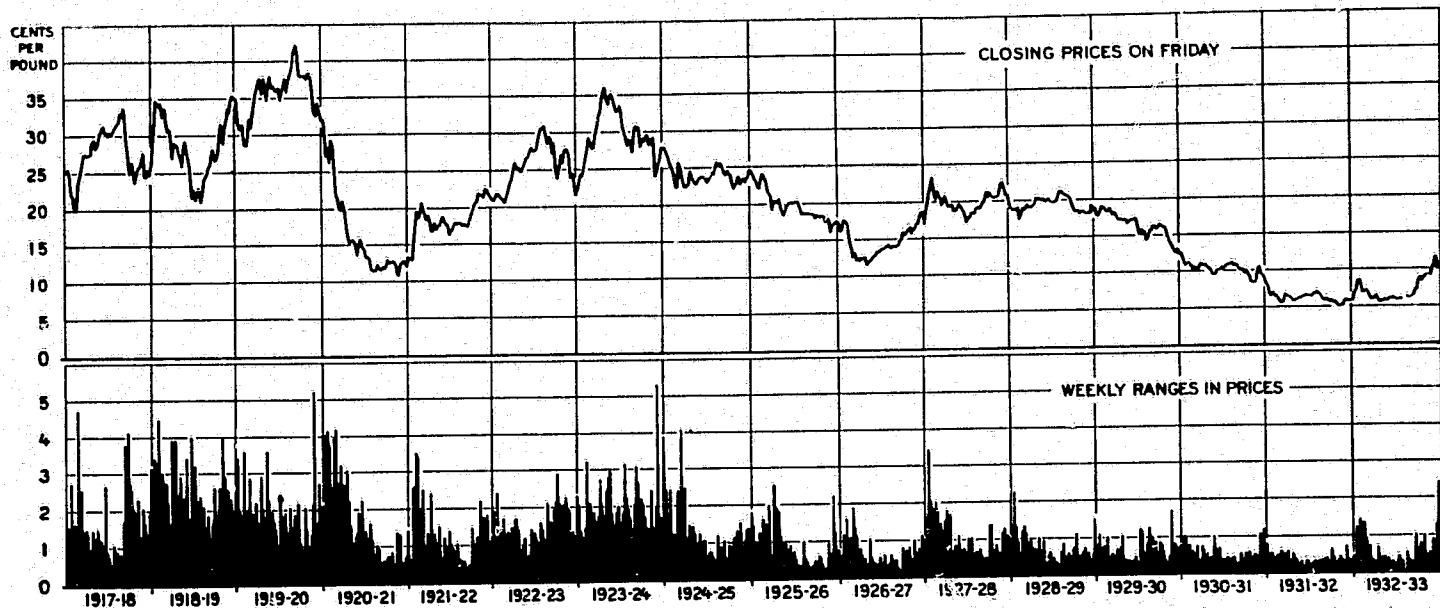


FIGURE 9.—CLOSING PRICES ON FRIDAY OF EACH WEEK AND WEEKLY RANGES IN PRICES OF COTTON FUTURES ON THE NEW YORK COTTON EXCHANGE FOR CONTRACTS FOR DELIVERY DURING THE NEAREST ACTIVE MONTH NOT IN PROCESS OF MATURING, 1917-18 TO 1932-33.

Weekly ranges in cotton futures prices varied considerably, but in general these ranges were relatively wide when the price level was relatively high.

The range in fluctuations in prices during the day exceeded the graduated limits 1.5 percent of the time for contracts for delivery during the nearest active month not in process of maturing, and 0.9 percent of the time for contracts traded in during the month of their maturity. The ranges in prices during the day were generally greater than the fluctuations in prices above and below the closing price on the previous day.

WEEKLY FLUCTUATIONS IN PRICES

The data on weekly fluctuations in cotton futures prices on the New York Cotton Exchange of contracts for delivery during the nearest active months not in process of maturing show a range of 2 or more cents per pound about 15 percent of the time during the period 1917-18 to 1932-33, inclusive (table 8). The range in prices during the week varied directly with the price of cotton, as shown in detail in figure 9. For example, when cotton prices were below 10 cents per

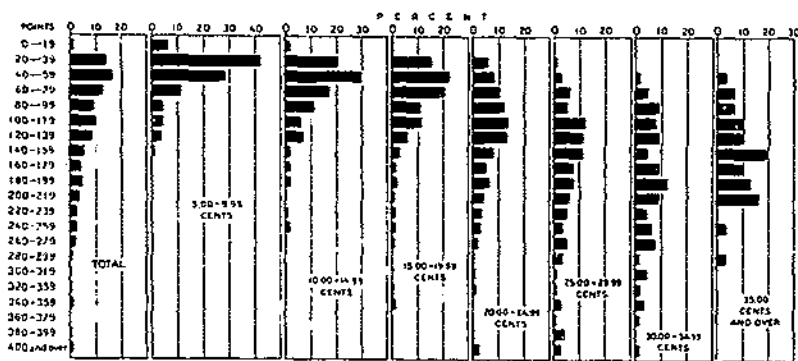


FIGURE 10.—DISTRIBUTION OF WEEKLY RANGES IN PRICES PER POUND OF NEW YORK COTTON FUTURES, FOR CONTRACTS BOUGHT AND SOLD PRIOR TO THE MONTH OF THEIR MATURITY, BY PRICE-LEVEL GROUPS, 1917-33.

Weekly ranges in cotton futures prices for contracts bought and sold prior to the month of their maturity varied widely, and the proportion of the time the ranges were relatively wide increased considerably from the lower to the higher price-level groups.

pound, the weekly range did not exceed 1.60 cents per pound; whereas, when prices were from 25 to 30 cents per pound, the range exceeded 1.60 cents per pound more than 50 percent of the time. An examination of figure 10 shows that these weekly ranges in prices increased progressively from the lower to the higher price-level groups.

The weekly ranges in prices of cotton futures contracts bought and sold during the month of their maturity were, on the whole, less than those in prices of contracts for other months (table 9). The weekly range in prices of contracts bought or sold during the month of their maturity also varied directly with the price level. When cotton prices were below 10 cent. per pound, the weekly range exceeded

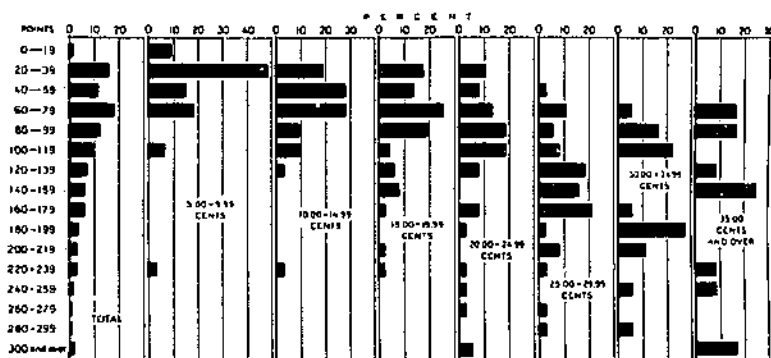


FIGURE 11.—DISTRIBUTION OF WEEKLY RANGES IN PRICES PER POUND OF NEW YORK COTTON FUTURES, FOR CONTRACTS BOUGHT AND SOLD DURING THE MONTH OF THEIR MATURITY, BY PRICE-LEVEL GROUPS, 1917-33.

Weekly ranges in prices of cotton futures contracts bought and sold during the month of their maturity also varied widely and the proportion of the time the ranges were relatively wide increased considerably from the lower to the higher price-level groups.

0.80 cent per pound less than 10 percent of the time; whereas, when prices were from 25 to 30 cents per pound, the weekly range exceeded 0.80 cent per pound approximately 86 percent of the time. Figure 11 shows that these weekly ranges in prices increased progressively from the lower to the higher price-level groups.

TABLE 8.—Distribution by number and percentage of weeks in which they occurred of the ranges in prices ¹ during the week of New York cotton futures contracts, by price-level groups, 1917-18 to 1932-33

Range during week (points) ¹	Weeks		Weeks when the price level ² was—													
			Below 10 cents		10 to 14.99 cents		15 to 19.99 cents		20 to 24.99 cents		25 to 29.99 cents		30 to 34.99 cents		35 cents and above	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-19.....	10	1.2	7	6.0	2	1.7	1	0.5	10	5.7	1	0.9				
20-39.....	116	14.0	40	41.9	24	20.3	32	15.2	14	8.0	3	2.6	1	1.6	1	3.2
40-59.....	134	16.1	33	28.2	35	29.7	47	22.4	14	8.0	7	6.0	3	4.6	2	6.5
60-79.....	106	12.7	13	11.1	20	17.0	43	20.5	18	10.3	7	6.0	3	4.6	2	6.5
80-99.....	78	9.1	5	4.3	13	11.0	23	10.9	21	12.0	6	5.2	6	9.2	2	6.5
100-119.....	82	9.9	5	4.3	7	5.9	24	11.4	24	13.7	14	12.1	5	7.7	3	9.7
120-139.....	69	8.3	4	3.4	8	6.8	12	5.7	23	13.1	13	11.2	6	9.2	3	9.7
140-159.....	45	5.4	1	.8	2	1.7	6	2.9	14	8.0	13	11.2	3	4.6	6	19.3
160-179.....	32	3.9			2	1.7	3	1.4	9	5.1	9	7.7	6	9.2	3	9.7
180-199.....	38	4.6			2	1.7	4	1.9	11	6.3	9	7.7	8	12.3	4	12.9
200-219.....	27	3.3					2	1.0	7	4.0	7	6.0	0	9.2	5	16.1
220-239.....	19	2.3			1	.8	3	1.4	6	3.4	6	5.2	3	4.6		
240-259.....	19	2.3			2	1.7	3	1.4	5	2.9	4	3.4	4	6.1	1	3.2
260-279.....	16	1.9					2	1.0	3	1.7	6	5.2	5	7.7		
280-299.....	7	.8							1	.6	4	3.4	1	1.6	1	3.2
300-319.....	7	.8					1	.5	2	1.1	1	.9	3	4.6		
320-339.....	5	.6					1	.5	2	1.1	1	.9	1	1.6		
340-359.....	8	1.0					3	1.4			3	2.6	2	3.0		
360-379.....	2	.2									1	.9	1	1.6		
380-399.....	6	.7							1	.6	5	4.3				
400 and above.....	8	.9							4	2.4	3	2.6	1	1.6		
Total.....	832	100.0	117	100.0	118	100.0	210	100.0	175	100.0	116	100.0	65	100.0	31	100.0

¹ Prices are for contracts for delivery in the nearest active month not in process of maturing.

² 100 points=1 cent.

³ Price level for this purpose is the closing price per pound for the week.

TABLE 9.—Distribution by number and percentage of weeks in which they occurred of the ranges in prices during the week of New York cotton futures contracts, during the month of their maturity, by price-level groups, 1917-18 to 1932-33

Range during week (points) ¹	Trading days		Weeks when the price level ² was—													
			Below 10 cents		10 to 14.99 cents		15 to 19.99 cents		20 to 24.99 cents		25 to 29.99 cents		30 to 34.99 cents		35 cents and above	
			Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
0-19	3	1.4	3	9.1												
20-39	35	15.8	16	48.5	6	18.8	9	17.0	4	10.5						
40-59	25	11.3	5	15.1	9	28.1	7	13.7	3	7.9	1	2.6				
60-79	40	18.0	6	18.2	9	28.1	13	25.5	5	13.2	4	10.6	1	5.6	2	16.7
80-99	27	12.2			3	9.4	10	19.6	7	18.5	2	5.3	3	16.6	2	16.7
100-119	21	9.5	2	6.1	3	9.4	2	3.9	7	18.5	3	7.9	4	22.2		
120-139	15	6.8			1	3.1	3	5.9	3	7.9	7	18.4			1	8.3
140-159	13	5.8					4	7.8			6	15.8			3	25.0
160-179	13	5.8					1	2.0	3	7.9	8	21.1	1	5.8		
180-199	7	3.2							1	2.6	1	2.6	5	27.7		
200-219	6	2.7					1	2.0			3	7.9	2	11.1		
220-239	6	2.7	1	3.0	1	3.1	1	2.0	1	2.6	1	2.6			1	8.3
240-259	3	1.4							1	2.6			1	5.6	1	8.3
260-279	2	.9							1	2.6			1	5.6		
280-299	2	.9									1	2.6			2	16.7
300 and above	4	1.6							2	5.2						
Total	222	100.0	33	100.0	32	100.0	51	100.0	38	100.0	38	100.0	18	100.0	12	100.0

¹ 100 points=1 cent.

² Price level for this purpose is the closing price per pound for the week.

Further analyses of the data in tables 8 and 9 were made by applying graduated limits equal to approximately 10 percent of the prices of futures contracts as a means of indicating whether changes in the level of cotton prices were associated with corresponding proportional changes in the ranges in price fluctuations during the week. The data in table 10 show the number of times and proportion of the time that these graduated limits were exceeded during the period 1917-18 to 1932-33. The weekly range in prices exceeded these limits 10.8 percent of the time for contracts bought and sold prior to the month of their maturity and 4.6 percent of the time for contracts bought and sold during the month of their maturity. The proportion of the time that these limits were exceeded varied somewhat from one price-level group to another; but the data indicate that, on the whole, changes in price level were associated with corresponding changes in weekly fluctuations in prices.

TABLE 10.—Number of times and proportion of the time that weekly range in prices of cotton futures contracts on the New York Cotton Exchange exceeded specified graduated limits, by price-level groups,¹ 1917-18 to 1932-33

Price level (cents per pound)	Contracts not in month of their maturity				Contracts in month of their maturity			
	Weeks	Graduated limit ²	Limit exceeded		Weeks	Graduated limit ²	Limit exceeded	
			Times	Proportion of time			Times	Proportion of time
	Number	Points	Number	Percent	Number	Points	Number	Percent
Below 10.....	117	80	15	12.8	33	80	3	0.1
10-14.00.....	118	130	13	11.0	32	130	1	3.1
15-19.00.....	210	180	19	9.0	61	180	2	3.0
20-24.00.....	175	230	21	12.0	38	230	4	7.0
25-29.00.....	116	280	15	15.5	38	280	1	3.0
30-34.00.....	65	330	4	6.2	18	330	0	-----
35 and above.....	31	380	0	-----	12	380	0	-----

¹ Price level for this purpose is the closing price per pound for the week.
² Limits equal to approximately 10 percent of the prices of contracts.

SUMMARY

The results of this study of fluctuations in prices of cotton futures contracts show that, for contracts bought and sold prior to the month of their maturity, the range in prices during the day equaled or exceeded 2 cents per pound only 19 times, or about 0.4 percent of the time, during the 16-year period 1917-18 to 1932-33. Fluctuations in prices above and also below the closing price on the previous day each exceeded 2 cents per pound only 6 times, or approximately 0.1 percent of the time.

Changes in prices during the day were less, on the whole, for contracts bought and sold during the month of their maturity than for contracts of other months.

The extent of price changes during the day varied directly with the level of prices of the contracts. The range of prices during the day and fluctuations in prices above and below the closing price on the previous day increased progressively from the lower to the higher price-level groups.

Analyses of the data on the basis of graduated limits indicate that changes in the price level of cotton futures contracts were generally associated with corresponding proportional changes in prices during the day and during the week.

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END