

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: The Behavior of Prices

Volume Author/Editor: Frederick C. Mills

Volume Publisher: NBER

Volume ISBN: 0-87014-010-8

Volume URL: <http://www.nber.org/books/mill27-1>

Publication Date: 1927

Chapter Title: Regional Differences in Prices

Chapter Author: Frederick C. Mills

Chapter URL: <http://www.nber.org/chapters/c5324>

Chapter pages in book: (p. 161 - 186)

CHAPTER II

REGIONAL DIFFERENCES IN COMMODITY PRICES AND IN PRICE BEHAVIOR

In the use of current index numbers of prices we are accustomed to treat very large geographical areas as units. Thus half a dozen American index numbers of wholesale prices purport to measure price changes in the United States, and they are currently interpreted as indexes which represent wholesale price movements in the country as a whole. Such an interpretation is valid if the movements of general prices are equal in degree and synchronous in time, or nearly so, over the entire country. Or it may be valid, even though the movements of prices in different parts of the country differ somewhat, if we look upon the index as an average for the country as a whole. In this case the index should be so constructed that the different geographical areas are properly represented in the list of price quotations employed. In the absence of proof that price movements are uniform throughout the country, careful regional sampling is essential in the construction of a general index number.¹

The data for a systematic study of regional price differences within a single country are not at present available. It is possible in the present section, therefore, to do no more than suggest a method and present a few scattered results indicating the magnitude of these regional differences.

Two general divisions of such a study have been named in the title of this chapter. The first is a study of the actual price differences prevailing at given dates. Certain commodities are standardized in price throughout the country, while others differ in price from market to market. In the degree of variation found at a given time in the quotations for a single homogeneous commodity is found an important characteristic of that article. Again comparable price quotations drawn from different regions throw light on the size and character of the market for a given commodity, and facilitate study of the problem of competitive price.²

¹Practically all the price quotations entering into Dun's index number and into Fisher's weekly index number relate to the New York market. The quotations employed by the Bureau of Labor Statistics are drawn from different markets, but there is no attempt at systematic regional sampling.

²A very effective device for portraying regional price differences has been employed by Holbrook Working ("Factors Determining the Price of Potatoes in St. Paul and Minneapolis," *Technical Bulletin No. 10*, University of Minnesota, Agricultural Experiment Station). This is an *isotimic map*, which shows lines of equal price, just as an isothermal map shows lines of equal temperature.

The other phase of this investigation relates to the behavior of commodity prices in different regions. Differences in the degree of price change between specific dates, differences in variability, trend differences, differences in the timing, duration and amplitude of cyclical movements, differences in flexibility—all these would be studied in a comprehensive survey of price behavior in different countries or in different sections of a single country. It is highly probable on *a priori* grounds that differences in economic and other cultural conditions will be accompanied by significant differences in the behavior of commodity prices.

I Regional Differences in Prices

As a measure of regional price differences the *mean deviation*, in absolute form and as a percentage of the mean, has been employed. The data utilized relate to the wholesale prices of certain building materials and gasoline, retail prices of a number of foods, coal, gas and electricity, and dry goods, and farm prices of certain agricultural products. For purposes of comparison similar measures of regional differences in discount rates have been computed.

1. REGIONAL DIFFERENCES IN WHOLESALE PRICES

a. *Building Materials.* In studying regional differences in the prices of building materials, prices paid by contractors in various cities have been employed.¹ For the purpose of the present example prices of six commodities, at four different dates, have been utilized. The dates to which the prices relate mark the approximate turning points of general building material prices, as measured by the group index of the United States Bureau of Labor Statistics.² The cities represented vary in number from 16 to 24.³

¹The prices, which relate to materials delivered on the job, are compiled by the Division of Building and Housing of the Bureau of Standards. They appear in a monthly mimeographed release of the U. S. Department of Commerce.

²The values of this building materials index, at important turning points, were as follows:

March, 1922	154.6
April, 1923	204.3
July, 1924	168.8
Feb., 1925	182.8

The base of these relatives is the average for 1913.

³These cities include Pittsburgh, Erie, Cleveland, Akron, Toledo, Lorain, Dayton, Detroit, Bay City, Saginaw, Waterloo, Kansas City, Sioux Falls, San Antonio, Tucson,

The measures relating to the individual commodities are summarized in Table 56, on the next page.

Certain rather curious differences between commodities are revealed in this table. One would expect the degree of variation to increase, if measured in absolute terms, as the average increases. For four of the six commodities listed above just the reverse is true. At the dates when prices were lowest the absolute measures of regional difference were greatest for Portland cement, pine boards, lime and building sand. With common brick the absolute differences from city to city are least with low prices, and greatest with high prices. Wire nails show conflicting tendencies in this respect.

No definite conclusions concerning the relation between regional differences and the scale of absolute prices should be drawn from these quotations, however. The prices employed relate to but four dates. More detailed figures which are given at a later point indicate a relationship which is not quite so simple as that suggested by the data in Table 56.

In comparing commodities the relative measures of regional difference given in column (4) should be employed. Although the cities from which price quotations were drawn were not precisely the same for the six commodities listed, it is not probable that the rather slight differences in this respect have any material effect on the relative measures given in this table, nor on the averages derived from them.

In general, the tendency has been for the degree of regional difference to decline since the date of the low point in general building material prices in 1922. This is true of all the above commodities except common brick.

On the basis of the averages given in column (4) of Table 56, Portland cement appears to be most uniform in price among the cities included, while building sand is least uniform. Reasons for

Spokane, Portland, Ore., Baltimore, Fairmont, Columbia, Savannah, Shreveport, New London, Poughkeepsie, Albany, Rochester, Buffalo.

Each of these cities is represented in the quotations for the commodities mentioned, except for the following omissions:

Common brick:	Erie, Toledo, Spokane.
Portland cement:	Toledo, Kansas City, Spokane.
Pine boards:	Erie, Toledo, Dayton, Detroit, Saginaw, Spokane, Baltimore, Savannah, Albany, Rochester, Buffalo.
Lime:	Waterloo, Kansas City, Tucson, Spokane, New London.
Building sand:	Kansas City, Sioux Falls, Spokane, Portland, Ore., Albany, Buffalo.
Wire nails:	Erie, Cleveland, Toledo, Lorain, Bay City, Sioux Falls, Portland, Ore., Savannah, Shreveport, Albany, Rochester.

TABLE 56

MEASURES OF REGIONAL DIFFERENCES IN BUILDING MATERIAL PRICES

(1) Date	(2) Mean price per unit	(3) Regional price difference (mean deviation)		(4)
		Absolute	Relative	
A. Common brick (24 cities) (Unit: 1000 brick)				
April 1, 1922	\$15.48	\$1.95		12.6
May 1, 1923	18.88	3.09		16.4
August 1, 1924	17.88	2.41		13.5
March 1, 1925	17.80	2.42		13.6
Average				14.0
B. Portland cement (24 cities) (Unit: barrel)				
April 1, 1922	\$ 2.77	\$.38		13.4
May 1, 1923	3.47	.26		7.5
August 1, 1924	3.10	.29		9.3
March 1, 1925	3.10	.29		9.3
Average				9.9
C. Pine, common boards, no. 1, 1x6 (16 cities) (Unit: 1000 feet)				
April 1, 1922	\$39.69	\$8.79		22.1
May 1, 1923	49.00	8.06		16.4
August 1, 1924	43.62	7.26		16.6
March 1, 1925	45.25	7.94		17.5
Average				18.1
D. Lime, hydrated (22 cities) (Unit: ton)				
April 1, 1922	\$18.61	\$2.95		15.8
May 1, 1923	19.87	2.72		13.7
August 1, 1924	19.41	2.58		13.3
March 1, 1925	19.78	2.45		12.4
Average				13.8
E. Building sand (21 cities) (Unit: cubic yard)				
April 1, 1922	\$ 2.21	\$.60		27.1
May 1, 1923	2.35	.45		19.1
August 1, 1924	2.25	.47		20.9
March 1, 1925	2.29	.40		17.5
Average				21.1
F. Wire nails (16 cities) (Unit: keg)				
April 1, 1922	\$ 3.89	\$.56		14.4
May 1, 1923	4.50	.70		15.5
August 1, 1924	4.24	.47		11.1
March 1, 1925	4.26	.61		14.3
Average				13.8

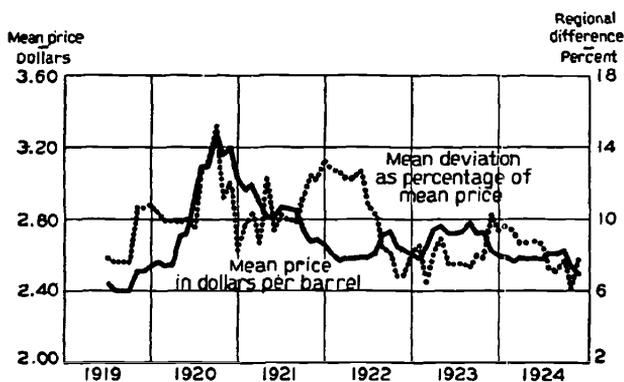
these varying results do not concern us now. Differences in transportation charges, regional differences in the availability of supplies, differences in producing and marketing conditions, and differences in the intensity of competition would interact in various ways to produce the differences noted.

It is possible to make a more detailed study of regional differences in the prices of Portland cement. Monthly quotations on this commodity for a number of cities are given in *Mineral Resources of the United States*, published by the United States Geological Survey. Wholesale prices in ten cities,¹ as given by months for the period from July, 1919, to December, 1924, have been employed in computing the measures given in Table 57.

The average monthly price and the mean deviation, in cents, are plotted in the accompanying graph.

FIGURE 10

AVERAGE MONTHLY PRICES AND MEASURES OF REGIONAL DIFFERENCES IN THE PRICES OF PORTLAND CEMENT, AT WHOLESALE, IN TEN AMERICAN CITIES, 1919-1924.



The figures and the graph show the rise in Portland cement prices to a high in 1920, the break late in that year, the gradual recovery in 1922 and 1923, and the moderate recession in price during 1923 and 1924. The measures of regional difference have varied materially during this period. Two periods of relatively wide regional price variation stand out. The first of these came at the peak of cement prices in 1920. The immediate effect of the ensuing decline in average prices was a sharp diminution in the degree of regional difference. This was due, presumably, to a more abrupt

¹Atlanta, Boston, Denver, Detroit, Kansas City, Los Angeles, New York, Pittsburgh, San Francisco, Seattle.

THE BEHAVIOR OF PRICES

TABLE 57

AVERAGE MONTHLY PRICES WITH MEASURES OF REGIONAL DIFFERENCES IN THE PRICES OF PORTLAND CEMENT, AT WHOLESALE, IN TEN AMERICAN CITIES, 1919-1924

(Unit: barrel)

(1) Month	(2) Mean price	(3) (4) Regional difference (mean deviation)		(5) Mean price	(6) (7) Regional difference (mean deviation)	
		Absolute	Relative		Absolute	Relative
		1919			1920	
January				\$2.54	\$.274	10.8
February				2.56	.268	10.4
March				2.54	.252	9.9
April				2.54	.252	9.9
May				2.71	.265	9.8
June				2.72	.272	10.0
July	\$2.44	\$.190	7.8	2.89	.275	9.5
August	2.40	.184	7.6	3.09	.393	12.7
September	2.40	.184	7.6	3.10	.409	13.2
October	2.40	.184	7.6	3.28	.498	15.2
November	2.51	.266	10.6	3.16	.354	11.2
December	2.51	.266	10.6	3.20	.386	12.1
		1921			1922	
January	3.02	.247	8.2	2.65	.350	13.2
February	2.96	.288	9.7	2.60	.334	12.8
March	2.99	.307	10.2	2.56	.322	12.5
April	2.89	.251	8.7	2.57	.314	12.2
May	2.80	.339	12.1	2.57	.314	12.2
June	2.81	.261	9.3	2.58	.326	12.6
July	2.87	.294	10.3	2.58	.279	10.8
August	2.86	.285	10.0	2.60	.267	10.2
September	2.85	.281	9.8	2.71	.231	8.5
October	2.73	.302	11.1	2.73	.220	8.1
November	2.67	.331	12.4	2.65	.181	6.8
December	2.68	.325	12.1	2.62	.181	6.9
		1923			1924	
January	2.60	.211	8.1	2.59	.241	9.3
February	2.58	.219	8.5	2.58	.248	9.6
March	2.64	.170	6.4	2.56	.239	9.3
April	2.74	.223	8.1	2.58	.221	8.6
May	2.76	.246	8.9	2.57	.222	8.6
June	2.72	.202	7.4	2.58	.224	8.7
July	2.72	.202	7.4	2.57	.222	8.6
August	2.73	.204	7.5	2.60	.186	7.1
September	2.78	.204	7.3	2.60	.183	7.0
October	2.72	.218	8.0	2.62	.202	7.7
November	2.72	.211	7.8	2.53	.153	6.0
December	2.62	.267	10.2	2.49	.192	7.7

decline in those markets in which prices had been exceptionally high than in those in which the price of the commodity had been below the average. This sharp decline in the measure of regional difference lasted only three months. Although the average price continued to fall for more than a year thereafter, the degree of regional difference increased irregularly after January, 1921.

The second period of high values in the measure of regional variation extended from November, 1921, to June, 1922. During this period the average price of cement reached its lowest point, following the recession of 1920-1922. The increase in the average price that began in April, 1922, brought a pronounced decline in the regional differences, the measure falling to a level slightly lower than that prevailing at the opening of the period here covered, in July, 1919. During 1923 and 1924 both the average price and the measure of regional difference fluctuated within comparatively narrow limits.

No general conclusions concerning the relation between changes in the average price of a commodity and variations in the degree of regional price difference may be drawn from a study of this one series. It is highly probable that extensive study would reveal important differences between commodities in this respect. The data in the next section portray a relationship differing materially from that illustrated above.

b. *Gasoline.* Gasoline is another commodity sufficiently standardized to permit a study of regional price differences. In the present analysis wholesale gasoline prices prevailing in fifty cities at seven different dates have been employed.¹ The results of the study are given in the following table.

TABLE 58
AVERAGE WHOLESALE PRICES AND MEASURES OF REGIONAL DIFFERENCES IN THE PRICES
OF GASOLINE IN FIFTY CITIES AT SEVEN DATES

(1) Date	(2) Mean price per gallon (in cents)	(3) (4) Regional price difference (mean deviation)	
		Absolute (in cents)	Relative
May, 1920	27.7	1.47	5.3
January, 1922	22.5	1.88	8.3
April, 1923	21.5	1.89	8.8
June, 1924	18.3	1.76	9.6
August, 1925	19.1	1.82	9.5
January, 1927	17.2	1.94	11.3
October, 1927*	14.5	1.78	12.2

*These measures are based upon quotations for 49 cities. A figure was not available for Crawford, Nebraska.

¹The quotations are wholesale tank wagon prices, exclusive of tax (where a tax is levied), as published in the *National Petroleum News*. The prices used are those given

In May, 1920, at the peak of general prices, gasoline prices were higher than at any of the other dates recorded above. (This was not the actual high of gasoline prices in 1920, however.) Regional differences, whether measured in absolute or relative terms, were at a minimum. By January, 1922, the average price had declined 5 cents a gallon, but the degree of regional difference had materially increased. The absolute measure of regional differences is fairly stable after that date, but the relative measure increases with declining average prices. In October, 1927, with the average price at the lowest here recorded, the relative measure of regional difference was at its maximum, values being more than twice as great as during the high prices of 1920. There is apparent here a tendency toward greater regional uniformity at high prices than at low, but with observations for only seven dates the precise relationship cannot be determined.

A more detailed story is furnished by the following measures. These have been computed from monthly tank wagon gasoline in that publication for the date nearest the first of the month. The following cities are represented:

Standard Oil N. J. Territory

Newark, N. J.
Baltimore, Md.
Washington, D. C.
Richmond, Va.
Wheeling, W. Va.
Charlotte, N. C.
Charleston, S. C.
Columbia, S. C.

Standard Oil N. Y. Territory

New York, N. Y.
Albany, N. Y.
Buffalo, N. Y.
Boston, Mass.

Atlantic Refining Territory

Pittsburgh, Pa.
Philadelphia, Pa.
Providence, R. I.
Hartford, Conn.

Standard Oil Ky. Territory

Lexington, Ky.
Birmingham, Ala.
Atlanta, Ga.
Savannah, Ga.

Continental Oil Territory

Denver, Colo.
Butte, Mont.
Salt Lake City, Utah
Albuquerque, N. M.
Boise, Idaho

Standard Oil Ind. Territory

Chicago, Ill.
Indianapolis, Ind.
Detroit, Mich.
Madison, Wis.
Minneapolis, Minn.
Des Moines, Iowa
St. Louis, Mo.
Fargo, N. D.

Standard Oil Nebraska Territory

Crawford, Nebr.
Omaha, Nebr.

Standard Oil Cal. Territory

Los Angeles, Cal.
San Francisco, Cal.
Portland, Ore.
Seattle, Wash.
Spokane, Wash.
Tacoma, Wash.

Standard Oil La. Territory

Little Rock, Ark.
New Orleans, La.
Shreveport, La.
Nashville, Tenn.
Memphis, Tenn.

Magnolia Petroleum Territory

Oklahoma City, Okla.
Dallas, Texas
El Paso, Texas
Fort Worth, Texas

prices at wholesale, in the ten cities represented by the cement figures in Table 57. Data from these cities alone were utilized in order that the results for cement and gasoline might be comparable.

TABLE 59

AVERAGE MONTHLY PRICES WITH MEASURES OF REGIONAL DIFFERENCES IN THE PRICES OF TANK WAGON GASOLINE, AT WHOLESALE, IN TEN AMERICAN CITIES, 1919-1927
(Unit: gallon)

(1) Month	(2) Mean price (in cents)	(3) (4) Regional difference (mean deviation)		(5) Mean price (in cents)	(6) (7) Regional difference (mean deviation)	
		Absolute	Relative		Absolute	Relative
		1919			1920	
January	23.1	1.54	6.6	23.3	1.43	6.1
February	23.3	1.66	7.1	24.3	1.71	7.0
March	23.3	1.66	7.1	24.6	1.94	7.9
April	23.3	1.66	7.1	26.6	1.93	7.3
May	23.3	1.66	7.1	26.8	2.10	7.8
June	23.4	1.74	7.5	27.5	2.44	8.9
July	23.5	1.58	6.7	27.6	2.53	9.2
August	23.5	1.58	6.7	27.6	2.53	9.2
September	23.1	1.22	5.3	29.3	1.83	6.2
October	23.1	1.22	5.3	29.3	1.83	6.2
November	23.1	1.22	5.3	29.3	1.83	6.2
December	23.1	1.22	5.3	29.2	1.77	6.1
		1921			1922	
January	29.0	1.54	5.3	22.5	2.23	9.9
February	27.1	1.70	6.3	21.7	1.26	5.8
March	25.5	1.71	6.7	21.7	1.26	5.8
April	24.8	1.27	5.1	21.7	1.26	5.8
May	24.7	1.41	5.7	22.6	1.62	7.1
June	22.9	2.11	9.2	23.9	2.11	8.8
July	22.1	1.74	7.9	24.0	2.21	9.2
August	21.8	2.09	9.6	22.9	1.51	6.6
September	20.9	1.80	8.6	22.3	1.51	6.8
October	20.8	1.94	9.3	22.3	1.51	6.8
November	22.4	1.77	7.9	20.2	1.69	8.3
December	22.9	2.47	10.8	19.9	1.81	9.0
		1923			1924	
January	19.5	1.41	7.2	13.1	1.66	12.7
February	19.2	1.73	9.0	16.5	2.20	13.3
March	20.6	2.30	11.1	18.0	1.80	10.0
April	20.4	2.69	13.2	18.0	1.80	10.0
May	19.1	2.79	14.6	18.0	1.80	10.0
June	19.2	1.95	10.2	18.0	1.80	10.0
July	19.2	1.95	10.2	17.0	2.20	12.9
August	18.0	2.59	14.4	16.4	1.72	10.5
September	15.7	2.46	15.7	16.0	1.40	8.8
October	14.6	2.83	19.4	14.1	.57	4.1
November	13.1	2.14	16.4	13.6	.68	5.0
December	12.4	1.70	13.8	13.4	.94	7.0

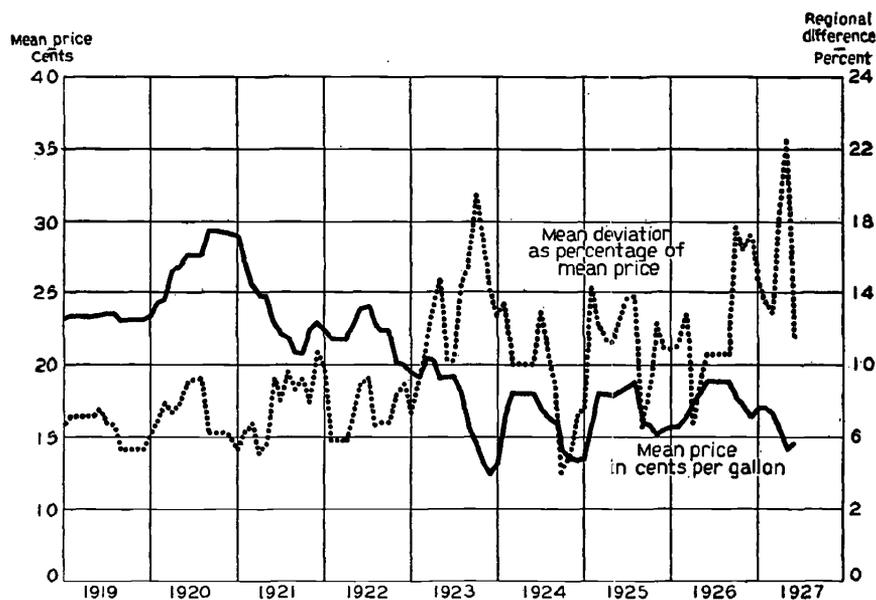
TABLE 59 (Cont.)

(1) Month	(2) Mean price (in cents)	(3) (4) Regional difference (mean deviation)		(5) Mean price (in cents)	(6) (7) Regional difference (mean deviation)		
		Absolute	Relative		Absolute	Relative	
		1925				1926	
January	13.5	1.04	7.7	15.7	1.70	10.9	
February	15.9	2.24	14.1	15.7	1.73	11.0	
March	18.1	2.22	12.2	16.3	2.09	12.8	
April	17.9	2.06	11.5	17.3	1.18	6.8	
May	17.8	1.99	11.2	18.1	1.62	8.9	
June	18.2	2.30	12.6	18.8	1.99	10.6	
July	18.5	2.54	13.7	18.8	1.99	10.6	
August	18.8	2.59	13.8	18.8	1.99	10.6	
September	16.1	1.04	6.4	18.8	1.99	10.6	
October	15.8	1.34	8.5	17.7	3.13	17.7	
November	15.2	1.86	12.2	17.2	2.83	16.4	
December	15.5	1.70	11.0	16.4	2.84	17.3	
		1927					
January	17.0	2.52	14.8				
February	17.0	2.32	13.6				
March	16.6	2.13	12.8				
April	15.4	2.93	19.0				
May	14.1	3.18	22.5				
June	14.7	1.69	11.5				
July	15.0	1.42	9.5				
August	15.1	1.56	10.4				
September	14.6	1.39	9.5				
October	14.2	1.56	11.0				

The average monthly prices and the mean deviations (expressed as percentages of the means) are plotted in Figure 11. The changes here are somewhat more erratic than are those traced in the study of cement price differences. The measure of regional differences in gasoline prices reached its peak and started a precipitous decline five months before the average price had begun to fall. Thereafter, as the average price declined, the measure of regional variation moved upward jerkily, reaching a peak two months before the low of gasoline prices in December, 1923. The mean price fluctuated about a fairly constant level after that date, while the index of regional differences recorded a major decline to a low in October 1924, and an irregular advance to a new high value in May, 1927. The later entries for 1927 are distinctly lower than the peak value but well above the average for the years prior to 1923.

FIGURE 11

AVERAGE MONTHLY PRICES AND MEASURES OF REGIONAL DIFFERENCES
IN THE PRICES OF TANK WAGON GASOLINE, AT WHOLESALE,
IN TEN AMERICAN CITIES, 1919-1927.



It is noteworthy that, except for temporary swings, the degree of regional variation in gasoline prices has been distinctly higher for the years 1923 to 1927 than for the years 1919 to 1922. This is more clearly brought out by a comparison of the averages, for these two periods, of the monthly entries in Table 59.

	1919-1922	1923-1927
Mean price of gasoline, at wholesale, in ten cities (in cents)	24.1	16.7
Measure of regional difference (absolute)	1.74	1.96
Measure of regional difference (relative)	7.2	11.8

The samples of wholesale prices presented in this section relate to but a narrow field. Limited though this evidence be, it indicates that there are very considerable regional differences in prices, even in prices relating to thoroughly standardized commodities, and that

TABLE 60

MEASURES OF REGIONAL DIFFERENCES IN FOOD PRICES, AT RETAIL

(1) Commodity	(2) Regional difference (mean deviation as percentage of mean)		(3)
	39 Cities 1913		51 Cities 1924
Wheat, cereal			2.8
Oleomargarine			3.4
Butter	2.6		3.8
Sugar, granulated	5.6		4.2
Lard	5.1		4.5
Corn flakes			4.8
Ham, sliced	5.2		5.0
Milk, evaporated			5.3
Nut margarine			5.5
Raisins			5.5
Bread	4.1		5.7
Lamb	6.3		5.9
Cheese	3.2		5.9
Rice	7.9		6.1
Coffee	8.6		6.2
Flour	8.8		6.3
Rolled oats			6.5
Beans, navy			6.5
Tomatoes, canned			6.5
Peas, canned			6.7
Corn, canned			6.7
Vegetable, lard substitute			7.3
Prunes			7.5
Salmon, canned red			7.8
Pork chops	5.0		7.9
Onions			8.2
Bacon, sliced	7.1		8.5
Macaroni			8.7
Beans, baked			8.7
Oranges			9.4
Cabbage			9.8
Tea	9.2		10.4
Chuck roast	5.4		10.5
Hens	7.6		10.6
Plate beef	8.8		11.3
Sirloin steak	7.0		12.2
Milk, fresh	7.4		12.2
Rib roast	6.7		13.5
Potatoes	11.2		13.7
Eggs, strictly fresh	17.5		13.7
Corn meal	19.0		14.7
Round steak	11.4		15.9
Bananas			38.3

these differences vary in magnitude from time to time. A comprehensive collection of measures similar to those given above, based upon quotations for a number of commodities and from a number of cities, would provide material for generalizations concerning regional variations in commodity prices. Although a few quite tentative principles have been suggested in the preceding pages, the data are too limited to justify any general conclusions.

2. REGIONAL DIFFERENCES IN RETAIL PRICES

a. *Foods.* Measures of regional variation in the prices of certain articles of food, at retail, appear in Table 60.¹ For the year 1924 these range in value from 2.8, for wheat cereal, to 38.3, for bananas. The prices of wheat cereal were standardized, and marked by only minor differences from city to city, while there were extreme regional diversities in banana prices. For certain articles prices prevailing in different cities in the year 1913 were available, and these were used in the computation of measures of regional variability for that year. Although the number of cities from which the quotations are drawn was not the same for 1913 as for 1924, some interest attaches to a comparison of the measures for the two years. Detailed comment is unnecessary.

b. *Coal, Gas and Electricity.* Retail prices of certain non-foods are gathered by the United States Bureau of Labor Statistics in a number of cities. Measures of regional differences in the prices of articles used for fuel and lighting, computed as in the preceding examples, appear in the following table.²

¹These prices have been secured from the bulletins of the United States Department of Labor on retail prices. For a few commodities the number of cities represented is slightly less than the number indicated in the column headings in Table 60. The measures in column (3) are based upon prices in 49 cities for oleomargarine, 50 cities for sliced ham, 50 cities for cabbages and 45 cities for sirloin steak. The measures in column (2) are based upon prices in 38 cities for sliced ham and 34 cities for plate beef and sirloin steak.

For certain commodities there may be some doubt as to the full comparability of the prices quoted for different cities. The difficulty of securing comparable quotations is greatest for certain of the cuts of beef, but most of the other commodities for which prices are given are standardized. Effort is made by the Bureau of Labor Statistics to secure comparable quotations.

²The prices used in preparing Tables 61 and 62 are taken from the *Monthly Labor Review*, a publication of the U. S. Bureau of Labor Statistics.

TABLE 61

MEASURES OF REGIONAL DIFFERENCES IN THE PRICES OF COAL, GAS
AND ELECTRICITY, AT RETAIL¹

(1) Commodity	(2) Unit	(3) No. of cities	(4)	(5)	(6)	(7) No. of cities	(8)	(9)	(10)
			1913 Mean price (av. for U. S.)	Regional difference (mean de- viation) Abso-Rela- lute tive	1924 Mean price (av. for U. S.)		Regional difference (mean de- viation) Abso-Rela- lute tive		
Anthracite coal	short ton	23	\$7.86	\$.77	9.8	28	\$16.04	\$1.08	6.7
Electricity	100 KW hrs	51	9.34	1.33	14.2	51	8.05	1.12	13.9
Gas (mfd.)	M ft.	43	.95	.11	11.6	42	1.27	.24	18.9
Bituminous coal	short ton	28	6.07	1.70	28.0	38	10.09	2.18	21.6

¹The prices of bituminous coal and anthracite coal are those prevailing in the various cities on January 15th of the years 1913 and 1924. The 1913 prices of gas are those prevailing on April 15th; the 1924 prices, those on March 15th. The prices of electricity are those prevailing in December of the years named. The prices of electricity, as quoted for different cities, are not perfectly comparable, since the tariffs often differ in other respects than in price. The rates employed in this study are those charged for the first units consumed, not for excess amounts. For convenience in presentation the rates per kilowatt hour have been multiplied by 100, although the initial consumption to which given rates apply is less than 100 kilowatt hours in many cities. Prices are taken from the *Monthly Labor Review*.

With the single exception of the figures relating to electricity, all the measures of regional difference increased in absolute value between 1913 and 1924. The mean deviation of electricity prices in 51 cities declined from \$1.33 in 1913 to \$1.12 in 1924. This accompanied a decline in the average price of electricity. The relative measures of regional difference declined for the two coal series and for electricity, but in the case of gas there was a material increase. For gas the factors responsible for differences in price, from city to city, were more important in 1924 than they were in 1913. They were less important (i. e. there was a closer approach to a uniform price) for electricity and, on a relative basis, less important for bituminous and anthracite coal.

When these four commodities are ranked on the basis of the 1924 measures of regional difference anthracite coal is found at the top of the list (i. e. its price is more uniform, from city to city, than the prices of the other commodities), with electricity, gas and bituminous coal standing in the order named. The differences in the number of cities from which quotations have been secured should be noted. The relatively small regional differences in the price of Pennsylvania anthracite coal are probably due in part, at least, to

the fact that the quotations are drawn from a smaller geographical area than are the quotations for the other commodities.

c. *Dry Goods.* Retail prices of seven dry goods have been utilized in preparing the following table.¹

TABLE 62

MEASURES OF REGIONAL DIFFERENCES IN RETAIL PRICES OF DRY GOODS

(1) Commodity	(2) (3) (4) May, 1915		(5) (6) (7) Sept., 1923			
	Mean price per yd.	Regional difference (mean deviation)		Mean price per yd.	Regional difference (mean deviation)	
		Absolute	Relative		Absolute	Relative
Sheeting, bleached	\$.312	\$.0175	5.6	\$.729	\$.0304	4.2
Muslin, bleached	.107	.0067	6.3	.245	.0108	4.4
Sheets, bleached	.822	.0562	6.8	1.803	.0832	4.6
Percalé	.130	.0086	6.6	.273	.0141	5.2
Outing flannel, 27-28 inch	.114	.0052	4.6	.252	.0142	5.6
Gingham, apron, 27-28 inch	.081	.0038	4.7	.198	.0113	5.7
Gingham, dress, 27 inch	.120	.0042	3.5	.259	.0156	6.0

Most of the measures of regional price differences for dry goods are lower than those for foods, and all the dry goods measures at the later date are lower than those for fuels. The rise in dry goods prices between 1915 and 1923 has brought, in all cases, an increase in the absolute differences between prices prevailing in different cities. The relative variability has increased for three of the articles quoted and declined for four. According to the 1923 figures, bleached sheeting was more nearly uniform in price than the other articles, while gingham dress goods showed the widest differences.

3. REGIONAL DIFFERENCES IN FARM PRICES²

More complete data have been utilized in computing measures of regional variability for seven farm products, for which December 1st farm prices were available by years for the period since 1890. In studying these results two different questions arise. One concerns possible changes in the degree of regional difference in the prices of a specific commodity with the passage of time, the other

¹The number of cities represented is 42 in May, 1915, and 51 in September, 1923, except for gingham dress goods, for which quotations for 50 cities were given in 1923.

²An important study in this field, dealing, however, with but one commodity, is contained in a report of the United States Department of Agriculture, "Geography of Wheat Prices," by L. B. Zapoleon (*U. S. D. A. Bulletin No. 594*).

involves a comparison of commodities in respect to regional price differences. The table immediately below throws some light on the first of these matters. In preparing this table annual measures of regional variability have been averaged, by periods, to facilitate the following of their secular movements. These measures are shown graphically in Figure 12.

TABLE 63
MEASURES OF REGIONAL DIFFERENCES IN FARM PRICES OF SEVEN AGRICULTURAL PRODUCTS
(Based upon December farm prices)

(1) Commodity	(2) Unit	(3) No. of states	(4) (5) (6) (7) (8) (9) (10) Mean deviation, in cents						
			1890- 1897	1898- 1905	1906- 1913	1914- 1921	1922- 1925	1890- 1925 inclusive	1890-1925 excluding 1914-1921
Barley	bu.	28	9.0	9.4	9.5	14.1	13.2	10.8	9.8
Corn	bu.	45	10.6	10.7	11.1	17.4	15.2	12.8	11.5
Oats	bu.	45	7.4	7.4	8.2	10.7	11.8	8.8	8.2
Rye	bu.	32	13.1	13.9	15.6	23.6	24.2	17.4	15.6
Wheat	bu.	42	10.5	10.6	10.0	15.7	13.8	11.9	10.8
Potatoes	bu.	46	13.5	15.2	15.4	24.8	28.2	18.4	16.6
Cotton*	lb.	13	.2		.7	1.4	.9	.8	.5

*Cotton prices by states were available only for the years 1890-1899, 1908-1925.

During the 24 years preceding 1914 the measures of regional differences in the prices of five of the above products, expressed in cents per bushel, increased slightly. These were barley, corn, oats, rye and potatoes. A greater increase was recorded in the measure for cotton. The data for the years 1900-1907 are lacking for cotton, however, so that it is impossible to follow the series over the entire period. For wheat alone did the regional differences decline.

The war period brought sharp increases in the absolute measures of regional difference, and these wider spreads between states were in most cases maintained in the last period covered (1922-1925). The annual figures (not given above) show for all seven of the commodities some decline in recent years from the highest values registered between 1917 and 1920, but in all cases except cotton the most recent figures are above the pre-war averages. These annual figures show wheat to be next to cotton in the degree to which pre-war conditions have been approached. This fact of a higher general spread between farm prices in the various states is a matter of considerable interest. It does not seem justifiable to explain it entirely as a result of higher prices, since there was no equal and concurrent

rise in these two quantities in the pre-war years. During the period from 1890 to 1913 the relative increase in the prices of the several commodities greatly exceeded the increase in regional spread, except in the case of cotton. Comparing the post-war years (1922-1925) with the last pre-war period (1906-1913), the percentage increase in spread materially exceeded the increase in price for four commodities (barley, oats, rye and potatoes), fell below the price increase for one (corn) and was approximately equal to the price increase for two (corn and wheat).

FIGURE 12

ABSOLUTE MEASURES OF REGIONAL DIFFERENCES IN THE FARM PRICES OF SIX AGRICULTURAL PRODUCTS.

Averages, by Periods.

(The measures plotted are the mean deviations of farm prices in cents per bushel in the several states. The number of states represented in each case is given in Table 63.)

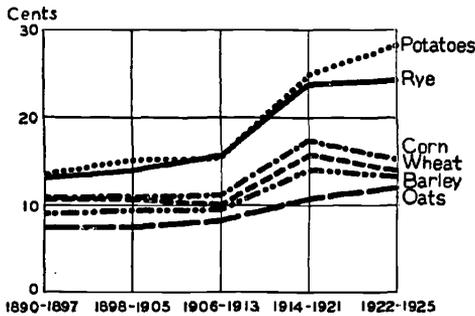


FIGURE 13

FARM PRICES OF SIX AGRICULTURAL PRODUCTS.

Average Price per Bushel, by Periods.

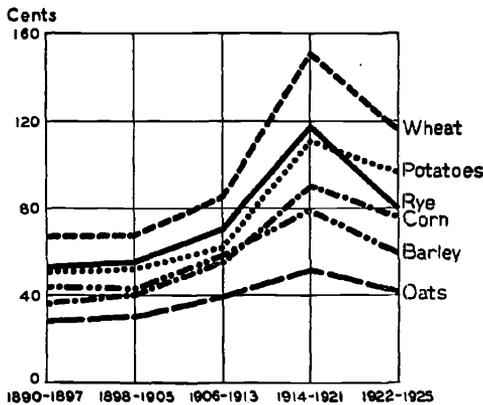
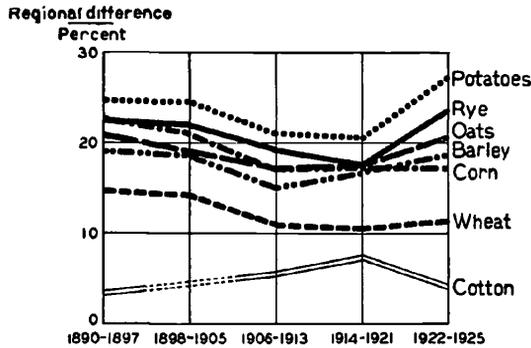


FIGURE 14

RELATIVE MEASURES OF REGIONAL DIFFERENCES IN THE FARM PRICES OF SEVEN AGRICULTURAL PRODUCTS.

Averages, by Periods.

(Mean deviation as percentage of mean price)



This price rise is shown, for the separate commodities, in Table 64 and in Figure 13. Farm prices, averaged for the periods employed in the preceding table, are here shown. The stability of regional spread prior to 1913 is particularly worthy of note when considered in connection with these figures. Cotton (not shown in Figure 13) stands as the one notable exception which had a greater relative increase in spread than in price during the 24 years preceding the war.

TABLE 64

DECEMBER FARM PRICES OF SEVEN AGRICULTURAL PRODUCTS

(1) Commodity	(2) Unit	(3) (4) (5) (6) (7) (8) (9) Average December farm prices, in cents						
		1890- 1897	1898- 1905	1906- 1913	1914- 1921	1922- 1925	1890-1925 inclusive	1890-1925 excluding 1914-1921
		Barley	bu.	43.9	42.7	58.4	79.2	59.6
Corn	bu.	35.7	40.4	54.8	89.9	76.1	57.5	48.3
Oats	bu.	28.4	30.2	39.3	52.2	41.7	38.0	33.9
Rye	bu.	53.2	54.9	70.3	117.4	79.7	74.6	62.3
Wheat	bu.	67.2	67.6	84.6	150.9	116.2	95.2	79.3
Potatoes	bu.	50.1	52.0	61.6	110.3	96.9	71.6	60.6
Cotton	lb.	7.1	8.3	11.2	19.8	23.9	13.0	11.0

When the measures of regional variability are expressed as percentages of their respective mean values it is possible to compare

the different commodities and to follow more accurately the changes in relative variability. These figures appear in the following table. Changes by periods are shown graphically in Figure 14.

TABLE 65

RELATIVE MEASURES OF REGIONAL DIFFERENCES IN FARM PRICES OF SEVEN AGRICULTURAL PRODUCTS

(Based upon December farm prices)

(1) Commodity	(2) No. of states	(3) (4) (5) (6) (7) (8) (9) Mean deviation as percentage of mean						
		1890- 1897	1898- 1905	1906- 1913	1914- 1921	1922- 1925	1890-1925 inclusive	1890-1925 excluding 1914-1921
		Barley	28	19.2	18.7	15.2	16.7	18.7
Corn	45	22.8	20.9	17.1	17.3	17.2	19.3	19.8
Oats	45	20.8	19.0	17.1	17.4	20.7	18.8	19.2
Rye	32	22.5	21.8	19.2	17.5	23.4	20.6	21.5
Wheat	42	14.7	14.1	10.9	10.5	11.2	12.4	12.9
Potatoes	46	24.7	24.6	21.1	20.6	27.2	23.2	24.0
Cotton	13	3.4		*5.5	7.3	4.0	*4.9	*4.0

*Cotton figures were available from 1890 to 1899 and from 1908 to 1925. The average for 1906-1913 is based on 6 years, and the averages for 1890-1925, including and excluding 1914-1921, are based on the 28 and 20 years, respectively, for which figures were available.

Of the seven articles listed cotton shows by far the smallest relative regional variation while potatoes, with a measure approximately six times that of cotton, has the highest. Some of the reasons for this are clear. The cotton states constitute a fairly homogeneous territory, and the price of cotton is set in a national, if not in a world market. Differences in price attributable to transportation charges are relatively low. In all these respects potatoes stand at the other extreme from cotton, and the wide difference in regional variability is a natural consequence.

The grains fall between cotton and potatoes in the matter of regional variability, with wheat at one extreme (the lowest) and rye at the other, not far below potatoes.

The pre-war trends of the percentage measures of regional difference were downward (except for cotton), a fact which follows naturally from the upward course of prices and the approximate stability of the inter-state spread, expressed in cents. During the last period covered (1922-1925) lower prices brought increases in the relative spread. Potatoes and rye were carried above the highest pre-war figure, oats and barley approximately up to the highest

pre-war average, while wheat, corn and cotton remained relatively low.

§ Regional Differences in Discount Rates

The records of regional differences in commodity prices may be supplemented, for purposes of comparison, by some figures relating to corresponding differences in discount rates. In view of the mobility of capital and the wide extent of the market for capital and credit it might be expected that the regional differences in discount rates would be relatively small. This assumption may be tested by means of the data on discount rates in a number of important cities which are compiled by the Federal Reserve Board and published monthly in the *Federal Reserve Bulletin*. They relate to customers' prime commercial loans. The original rates, as quoted for individual cities, are not averages, but are the rates at which the bulk of the loans of this class are made by reporting banks. Where the reported rates are given in terms of the range from low to high, an average of these limits has been taken. The Federal Reserve Board's reports show that some changes have been made from time to time in the method of reporting rates, but it does not appear that these have seriously affected the comparability of the rates for different periods. The comparison of cities, however, in respect to discount rates must be made with some reservations, because of the difficulty of securing fully comparable returns. Significance should not be attached, therefore, to minor differences between the averages for different cities. The larger differences represent true regional variations of considerable economic importance.

In the following table are given the average discount rates, by months from July, 1918, to August, 1927, and measures of regional differences in discount rates. The basic measure of regional difference is the *mean deviation*, deviations being measured from the arithmetic average of the rates prevailing in the several cities at each date. In the table this is shown in absolute form and as a percentage of the average rate.

TABLE 66

AVERAGE DISCOUNT RATES ON CUSTOMERS' LOANS IN AMERICAN CITIES, WITH MEASURES OF REGIONAL DIFFERENCES, 1918-1927

(The number of cities represented has varied from 32 to 35 since 1920. In 1918 and 1919 the number ranged from 26 to 32. For the names of cities and the original quotations see the *Federal Reserve Bulletin*.)

(1) Date	(2) Average rate	(3) Regional difference (mean deviation)		(4)
		Absolute	Relative	
1918				
July	6.05	.39		6.5
Aug.	6.20	.45		7.2
Sept.	6.23	.52		8.3
Oct.	6.20	.47		7.5
Nov.	6.23	.47		7.5
Dec.	6.14	.50		8.1

REGIONAL DIFFERENCES IN PRICES

181

TABLE 66 (Cont.)

(1) Date	(2) Average rate	(3) Regional difference (mean deviation)		(4)
		Absolute	Relative	
1919				
Jan.	6.14	.54		8.8
Feb.	6.14	.54		8.8
March	6.06	.54		8.9
April	6.04	.56		9.3
May	6.10	.56		9.2
June	6.01	.54		8.9
July	6.02	.54		8.9
Aug.	6.05	.50		8.3
Sept.	6.06	.52		8.6
Oct.	6.02	.49		8.1
Nov.	6.08	.49		8.0
Dec.	6.06	.46		7.6
1920				
Jan.	6.14	.49		8.0
Feb.	6.36	.43		6.8
March	6.45	.39		6.0
April	6.55	.39		5.9
May	6.69	.43		6.4
June	6.81	.41		6.0
July	6.86	.37		5.4
Aug.	6.89	.37		5.4
Sept.	6.89	.42		6.1
Oct.	6.88	.44		6.4
Nov.	6.91	.39		5.6
Dec.	6.94	.40		5.8
1921				
Jan.	6.97	.42		6.0
Feb.	6.99	.45		6.4
March	6.96	.40		5.8
April	7.02	.43		6.2
May	6.96	.40		5.8
June	6.94	.39		5.6
July	6.97	.39		5.6
Aug.	6.89	.41		6.0
Sept.	6.87	.42		6.1
Oct.	6.86	.42		6.2
Nov.	6.84	.43		6.3
Dec.	6.71	.51		7.6
1922				
Jan.	6.64	.54		8.2
Feb.	6.54	.61		9.4
March	6.43	.54		8.4
April	6.38	.59		9.2
May	6.27	.63		10.1
June	6.25	.62		9.9
July	6.12	.61		10.0
Aug.	6.08	.66		10.8
Sept.	6.10	.72		11.8
Oct.	6.01	.58		9.6
Nov.	5.97	.59		9.9
Dec.	6.11	.64		10.5
1923				
Jan.	6.05	.60		9.9
Feb.	5.99	.64		10.6
March	6.06	.55		9.0
April	6.04	.56		9.3
May	6.13	.55		9.0
June	6.10	.54		8.9
July	6.10	.59		9.6
Aug.	6.12	.58		9.5
Sept.	6.20	.59		9.5
Oct.	6.16	.63		10.2
Nov.	6.15	.54		8.9
Dec.	6.12	.56		9.1
1924				
Jan.	6.21	.56		9.0
Feb.	5.97	.46		7.8
March	5.96	.46		7.7
April	5.93	.48		8.2
May	5.89	.49		8.4

TABLE 66 (Conc.)

(1) Date	(2) Average rate	(3) Regional difference (mean deviation)		(4) Relative
		Absolute	Relative	
1924 (cont.)				
June	5.72	.52		9.0
July	5.68	.59		10.4
Aug.	5.54	.58		10.5
Sept.	5.61	.66		11.8
Oct.	5.52	.60		10.9
Nov.	5.53	.58		10.5
Dec.	5.53	.57		10.3
1925				
Jan.	5.50	.56		10.2
Feb.	5.53	.57		10.4
March	5.54	.50		9.1
April	5.57	.54		9.7
May	5.58	.57		10.3
June	5.57	.53		9.5
July	5.57	.57		10.2
Aug.	5.53	.55		10.0
Sept.	5.55	.51		9.2
Oct.	5.61	.54		9.7
Nov.	5.67	.54		9.5
Dec.	5.64	.52		9.2
1926				
Jan.	5.62	.49		8.8
Feb.	5.65	.51		9.0
March	5.61	.48		8.5
April	5.63	.47		8.4
May	5.62	.48		8.6
June	5.55	.53		9.5
July	5.54	.51		9.3
Aug.	5.57	.52		9.4
Sept.	5.62	.49		8.8
Oct.	5.66	.46		8.2
Nov.	5.62	.45		8.0
Dec.	5.65	.50		8.8
1927				
Jan.	5.61	.47		8.4
Feb.	5.64	.48		8.6
March	5.60	.52		9.3
April	5.60	.53		9.5
May	5.59	.52		9.4
June	5.57	.52		9.3
July	5.54	.47		8.6
Aug.	5.53	.53		9.6

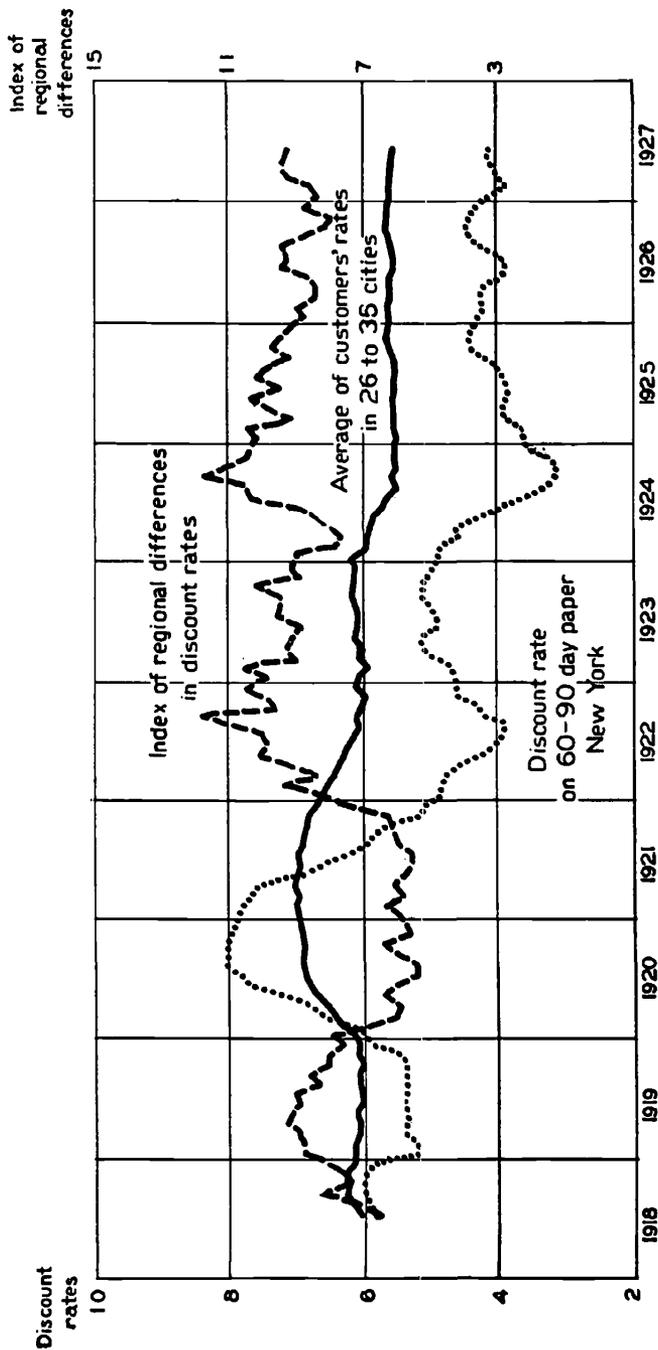
The mean rates and the relative measures of regional difference are plotted in Figure 15. It is clear from this graph that the degree of regional difference in discount rates varies considerably from time to time. The regional discrepancies were at a minimum during the period of high average rates in 1920 and 1921, and reached maximum values following the general decline of rates in 1921-22 and in 1924. The general course of the index of regional differences shows three relatively short periods of increase and three much longer periods of decline. The first increase came in late 1918 and early 1919, the second in 1921-22, the third in 1924. Each was followed by a considerably longer period of decline.

The general relationship between movements of the average rate and changes in degree of regional difference is an inverse one. With every sustained rise in the average rate there has been a decline in the degree of regional difference, and with every sustained fall in the average rate there has been an increase in these differences. High rates bring an approach to uniformity. With a low average rate there is a wide range between the charges in individual cities. This may be due to the fact

FIGURE 15

AVERAGE DISCOUNT RATE ON CUSTOMERS' LOANS IN 26 TO 35 CITIES, INDEX OF REGIONAL DIFFERENCES IN CUSTOMERS' RATES, AND RATE ON 60-90 DAY PAPER IN NEW YORK.

July, 1918—June, 1927.



that in some cities the fairly high rate which is set by custom or by regulation tends to prevail at all seasons. A decline in the average rate brings wider regional differences because the downward movement is generally much more marked in some cities than in others.

An alternative or parallel explanation of the changes in the index of regional differences in discount rates is offered by Mr. George Soule. Mr. Soule suggests that discount rates may be more uniform throughout the country when the member banks have to depend more largely on the reserve banks for their sources of credit. Conversely, departures from uniformity would be most pronounced when member banks are least dependent on the reserve banks in this respect. A month-by-month comparison of the index of regional differences in discount rates and discounts for member banks by the federal reserve banks between 1918 and 1927 shows an inverse relationship, which accords with Mr. Soule's explanation.

Some interest attaches to a comparison of the average of these rates with the market rate on 60-90 day paper in New York. (This latter figure, it should be noted, is the market rate as quoted in financial papers. It is not the "customers' rate", upon which the general averages are based.) This series is plotted on the same chart. As might be expected, the average rate for the country at large fluctuates over a much narrower range than does the New York rate, and moves in general on a distinctly higher level. Only during the period of violent disturbance between February, 1920, and May, 1921, was the average rate below the market rate in New York.

A somewhat more realistic view of the degree of regional difference in discount rates is afforded by the following table, showing the average rate in each of 34 cities during the five year period 1922-1926.

TABLE 67
DISCOUNT RATES ON CUSTOMERS' LOANS
AVERAGE RATES IN THIRTY FOUR AMERICAN CITIES, 1922-1926.

(1) Rank	(2) City	(3) Average rate	(1) Rank	(2) City	(3) Average rate
1	Boston	4.77	18	Cleveland	5.79
2	Philadelphia	4.95	19	Louisville	5.81
3	St. Louis	4.96	20	New Orleans	5.82
4	New York	5.01	21	Houston	5.82
5	Chicago	5.02	22	Denver	6.12
6	Minneapolis	5.18	23	Birmingham	6.14
7	Baltimore	5.36	24	Little Rock	6.21
8	San Francisco	5.40	25	Portland, Ore.	6.26
9	Richmond	5.41	26	Seattle	6.27
10	Dallas	5.44	27	Jacksonville	6.29
11	Detroit	5.49	28	Los Angeles	6.29
12	Pittsburgh	5.65	29	Salt Lake City	6.33
13	Kansas City	5.70	30	Nashville	6.35
14	Omaha	5.71	31	Spokane	6.40
15	Atlanta	5.71	32	Oklahoma City	6.67
16	Cincinnati	5.72	33	El Paso	7.63
17	Buffalo	5.76	34	Helena	7.73

The large cities of the northeast have the lowest rates, in general, while the higher rates are found in cities of the west and south. Although there is no sharp geographical division, the following grouping reveals certain broad differences between regions:

GROUP	Average rate on customers' loans, 1922-1926
Cities of the Middle Atlantic and Northeast (Boston, Philadelphia, New York, Buffalo)	5.12
Cities of the Upper Mississippi (St. Louis, Chicago, Minneapolis, Detroit, Pittsburgh, Cincinnati, Cleveland)	5.40
Cities of the South (Baltimore, Richmond, Atlanta, New Orleans, Louis- ville, Birmingham, Jacksonville, Nashville)	5.86
Cities of the Pacific Coast (San Francisco, Portland, Seattle, Los Angeles, Spokane)	6.12
Cities of the Western Plains and Rocky Mountains (Kansas City, Omaha, Denver, Salt Lake City, Helena)	6.32
Cities of the Southwest (Dallas, Houston, Little Rock, Oklahoma City, El Paso)	6.35

The differences between cities and between the various groups of cities distinguished above represent variations in the degree of commercial development and business stability, differences in the amount of available credit and differences in the intensity of the demand for capital and credit, as well as variations in local business conditions and banking habits.

It is impossible, with the data available, to make an accurate comparison of discount rates and the prices of specific commodities in respect to regional variation. The markets from which the original quotations were drawn were not the same, nor were the periods of time covered identical. A rough comparison is of some interest, but the conclusions to be drawn are merely suggestive, and not final.

Certain measures of regional variation, all in relative form, are brought together in the table on the next page.

Discount rates appear to be more uniform in price than most of the farm price and wholesale price series. There is one exception in the former group, for the farm price of cotton is marked by much smaller regional differences than are discount rates. Among commodities at wholesale the averages for Portland cement and gasoline are only slightly greater than that for discount rates. All the dry goods are more uniform, in their retail price quotations, than discount rates.

In addition to the articles listed above measures for 43 articles of food, at retail, are given in Table 60. These are based upon quotations from 51 cities. The measure of regional differences in discount rates exceeds the corresponding measures for 26 of these articles, and is exceeded by the measures for 17 foods.

TABLE 68

MEASURES OF REGIONAL DIFFERENCES IN DISCOUNT RATES AND IN SELECTED COMMODITY PRICE SERIES.

(1) Series	(2) Period covered by original quotations	(3) No. of markets represented	(4) Average measure of regional difference (relative)
Discount rates	1918-1927	26 to 35	8.5
Farm prices			
Cotton	1922-1925	13	4.0
Wheat	1922-1925	42	11.2
Corn	1922-1925	45	17.2
Barley	1922-1925	28	18.7
Oats	1922-1925	45	20.7
Rye	1922-1925	32	23.4
Potatoes	1922-1925	46	27.2
Building materials			
Portland cement	1922-1925	24	9.9
Wire nails	1922-1925	16	13.8
Lime	1922-1925	22	13.8
Brick	1922-1925	24	14.0
Pine boards	1922-1925	16	18.1
Sand	1922-1925	21	21.1
Gasoline	1920-1927	50	8.8
Dry goods at retail			
Sheeting, bleached	1923	51	4.2
Muslin, bleached	1923	51	4.4
Percale	1923	51	5.2
Flannel, outing	1923	51	5.6
Gingham, apron	1923	51	5.7
Fuels, at retail			
Anthracite coal	1924	28	6.7
Electricity	1924	51	13.9
Gas, manufactured	1924	42	18.9
Bituminous coal	1924	38	21.6

The degree of regional diversity in discount rates is somewhat greater than might have been expected. In spite of the traditionally wide market for credit, regional differences in discount rates appear to be greater than those found among many commodities in retail markets, and are not materially lower than the differences prevailing in the prices of certain staple commodities in wholesale markets.

II Regional Differences in Price Behavior

An example of obvious regional differences in price behavior is afforded by index numbers of wholesale prices in different countries. That American and German prices followed somewhat different courses between 1915 and 1925 needs no demonstration. Our present concern, however, is not with international differences in the movements of wholesale price index numbers. The objects of immediate interest are the less obvious differences between the behavior of the prices of individual commodities and commodity groups in different markets and in different geographical areas. The aspects of price behavior which should be studied in making