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UNITED STATES DEPARTMENT OF AGRICULTURE
Bureau of Agricultural Economics
Division of Statistical and Historical Research

RAILROAD TRANSPORTATION AND AGRICULTURE
DURING THE DEPRESSION

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Prices Declined More in Agriculture, Production More in the Railroad Industry

During a depression, production and prices follow a different course in agriculture than in other industries. In agriculture, production remains almost as great as during prosperity, while prices received greatly decline. In many other industries, production is markedly reduced, while prices do not decline nearly as much as production. Railroad transportation during the current depression has provided an example of this contrast between industry and agriculture.

Production in agriculture may be measured by the index numbers of agricultural production computed in the Bureau of Agricultural Economics. On the railroads, production consists of the movement of freight and passengers. It may be measured by the number of revenue ton-miles and revenue passenger-miles. The Bureau also computes an index number of farm prices. Revenue per ton-mile and per passenger-mile may be taken as the only available indices of the prices of railway services in general. (Tables 1 and 2; figs. 1 and 2.)

During the 5 years from 1925 to 1929, inclusive, production and prices in both industries were fairly stable, although there was a definite downward trend in production of passenger service. In comparison with what followed, these were years of relative prosperity for both industries. Averages for these 5 years will be taken as bases from which to measure subsequent declines. References hereinafter to production, prices, income, employment, etc., during the period of prosperity should be understood as references to the respective averages for these 5 years.

The contrast between agriculture and the railroad industry was most striking in the years of deepening depression. In the first year, 1930, agricultural production was unchanged, while freight traffic turned sharply downward, and the downward trend in passenger traffic, which had been almost arrested in 1929, was accentuated in 1930. Prices received by farmers, on the other hand, showed a marked decline, comparable with that in freight traffic, while revenue per ton-mile and per passenger-mile declined very little. During the following 2 years, the difference in the course of events in the two industries became more pronounced. In 1932, agricultural production was still 99 percent as great as in the period of prosperity, while production of freight service had fallen to 54 percent, and production of passenger service to 51 percent. Farm prices, on the other hand, had fallen to 44 percent of their average during prosperity, while revenue per

ton-mile was still 97 percent as great, and revenue per passenger-mile was still 77 percent as great as during prosperity 1/.

Since 1932, the situation has changed in some respects. As a result of production-control programs and the drought, agricultural production has declined moderately. Largely incident to the partial revival in business, railroad freight traffic has increased somewhat. The decline in passenger traffic was almost halted in 1933, and the trend was subsequently reversed. Farm prices, partly because of reduced supplies and partly because of reviving demand, have risen substantially. Revenue per ton-mile and especially per passenger-mile have declined at a greater rate than before. The decline reflects an increasing effort on the part of railroad managements to meet the competition of other forms of transport. In certain cases, rate reductions seem definitely to have been a factor in the increase in railroad business. This is particularly true of cotton traffic and southern passenger traffic.

The situation in regard to the railroads is nevertheless still in contrast with that in agriculture. Agricultural production in 1935 was still 90 percent as large as in the period of prosperity, while freight traffic was only 65 percent as large and passenger traffic only 55 percent as large. Farm prices in 1935 (calendar year) were 73 percent as high as their average in the 5 years of prosperity. Revenue per ton-mile was 91 percent as high. Revenue per passenger-mile, however, was in fact below farm prices, being 67 percent as high as in prosperity.

Both Low Prices in Agriculture and Low Volume on the Railroads
Resulted in Low Revenues and Income

Although the prices of railway services were maintained at a relatively high level, the aggregate revenues received by the railroads declined to an extent that was comparable with the decline in the aggregate gross returns to farmers. For the decline in volume of services on the railroads reduced their aggregate receipts, just as the decline in unit prices reduced the receipts of farmers. (Table 3, and fig. 3). During the first 3 years of depression, the decline in railroad operating revenues was almost parallel to that in the gross income of farmers 2/, although the decline in the latter was consistently greater. In 1932 farm gross income had fallen to 45 percent of its pre-depression average, while railway operating revenues had fallen to half their former amount. Since 1932 farm gross income has recovered more rapidly than have railway operating revenues, although the prices of railway services as a whole were still higher than the prices of farm products 3/. The aggregate value of farm production in 1935 was 69 percent as great as during the years of prosperity, while railway revenues were only 56 percent as great.

1/ Through 1932, the apparently considerable decline in revenue per passenger-mile reflected in part the increasing relative importance of the commutation traffic, which pays low rates. Revenue per passenger-mile from other-than-commutation traffic in 1932, was 81 percent of the average during prosperity.

2/ This figure is the cash revenue from sales of crops produced during the year plus the value at current farm prices of farm products consumed in the farm home. Cash returns alone followed the same general course.

3/ The average price of passenger service was lower in 1935 than the average of farm prices, but passenger service is a much less important source of revenue than freight service.

When the two industries are compared with respect to net returns to capital and labor, the story is much the same as in the case of gross returns. (Table 4, fig.4.) Farming is carried on in small enterprises operated largely by their owners, with the aid of a relatively small amount of hired labor. In railroad transportation, on the other hand, all labor, including managerial service, is hired, and operating profits are entirely a return on investment. The returns to capital and labor should therefore be combined for each industry before the industries are compared.

As in the case of gross returns, the net income to capital and labor from both industries declined rapidly during the first 3 years of the depression, and that derived from agriculture declined somewhat more than that derived from transportation. In 1932, the net income from agriculture was 36 percent of its average before the depression, while the income from transportation was 46 percent of the corresponding average ^{4/}. Again as in the case of gross returns, net income from agriculture has recovered to a higher level than net income from transportation. In 1934, income from agriculture was 59 percent as great as the average during the period of prosperity; that from transportation was only half as great. In 1935, income from transportation was about 54 percent as great. The 1935 figure for agriculture is not yet available, but present indications are that it will be materially above the level reached in 1934, and therefore above the level reached by railroad income in 1935.

Income from Farming was Reduced More in Proportion to Service Rendered

Net income from transportation declined comparatively little in proportion to service rendered. In 1932, when returns to investors and workers in the railroad industry were only 46 percent as great as in the 5 years of prosperity, the output of ton-miles was only 54 percent as great, and that of passenger-miles only 51 percent as great. Returns to capital and labor in agriculture were reduced more, although output was about as great as in prosperity. Income from farming had fallen to 36 percent of its aggregate amount during prosperity; production was only 1 percent less. The railroad industry produced less and earned less; agriculture produced just as much but earned less anyway.

Employment More Stable in Agriculture

During the period of prosperity the number of persons living on farms was gradually declining, from 31,064,000 on January 1, 1925 to 30,169,000 on January 1, 1930. Thereafter the number actually increased to 32,779,000 on January 1, 1935. The trend in number of persons on farms is not exactly representative of the trend in the number of persons operating farms on a commercial scale. Nevertheless, the number of persons deriving their livelihood from agriculture clearly did not decline appreciably during the depression.

^{4/} Figures in this paragraph refer to "income produced" rather than to "income paid out" or withdrawn.

Most of the workers on farms are self-employed. Remaining at work, these farm operators accepted greatly reduced returns for their productive efforts. Some farm operators were dispossessed, reduced in status from owners to tenants, or forced to seek aid from relief agencies. In railroad transportation, on the other hand, average hourly earnings were only moderately and temporarily reduced. But in 1932 the number of persons employed on the railroads declined to 62 percent of 1929, and in 1933 was further reduced to 58 percent. Even in 1935 it was only 60 percent of 1929. The amount of work performed for hire on farms, although materially reduced, did not decline as much as on the railroads. The number of hired workers per 100 farms reporting this information reached a low point in 1934 of 71 percent of 1929 ^{5/}. Railway employment reached a low point of 58 percent of 1929 in 1933. In 1935, the number of hired workers per 100 farms was about 75 percent of 1929, while the number of railroad workers was but 60 percent of 1929 ^{6/}. Farm wages declined along with prices, reaching a low point of 47 percent of 1929 in 1934 and rising to 58 percent of 1929 in 1935 ^{7/}.

Agricultural Production a Sustaining Factor in Railroad Traffic

Commodities cannot be transported, of course, until they are produced. One aspect of the depression has been the great decline in the volume of commodities produced. The Federal Reserve Board index number of mineral production for 1932 is only 66 percent of its 1925-29 average; the index number of manufacturing production only 57 percent. In agriculture, as already noted, there was no appreciable decline. Even for 1935, the industrial figures are 85 and 82 respectively, comparable with 90 for agriculture.

The mere fact that goods have been produced does not necessarily mean that they will be transported by railroad. Their owners may prefer uses or outlets for them which do not involve railroad transportation. In the case of industrial products, this was a relatively minor factor. The divergence between production of and railway traffic in industrial products was not nearly so marked as in the case of farm products. For the latter, other uses and outlets became relatively more attractive as the depression proceeded; uses and outlets involving railroad transportation became relatively less attractive. (Table 2 and fig. 5.) Although agricultural production was practically the same in 1932 as in the 5 years of general prosperity, the tonnage of farm products shipped by railroad was only 71 percent as great. Thereafter farm production declined more than farm traffic; but in 1934 production was still 90 percent as great, and farm traffic only 69 percent as great as in prosperity. The difference, in this year, could be accounted for partly by failure to harvest crops, partly by increased farm and local consumption, partly by a shift in production from products which involve relatively much transportation to products which involve relatively little, and partly by a shift in individual products to other forms of transport.

^{5/} Information is not available for the full year 1933.

^{6/} Comparisons based on the period 1925-29, employed elsewhere, would exaggerate the contrast here developed, inasmuch as the trend in railway employment during this period was downward, while the trend in farm employment was upward or stationary.

^{7/} For data on farm and railroad employment for other years, see table 5.

Reductions in prices asked by other transportation agencies and in costs to farmers and dealers in farm products of performing their own transportation seem to have been an important factor in the last-mentioned shift.

The relatively greater diversion of farm production to other uses and outlets, nevertheless, was more than offset by the relative constancy of agricultural as compared with industrial production. While the tonnage of farm products "originated" had fallen to 71 percent by 1932, the tonnage of all other products "originated" had fallen to 47 percent of the prosperity average. Even in 1934, with some decline in farm production and some increase in industrial production, industrial tonnage was only 57 percent of prosperity, while farm tonnage was 69 percent.

If the managers of industrial enterprises had followed the same policy as farmers by producing in customary volume regardless of prices, there would have been no great shrinkage in the volume of goods available for transportation. If the railroads had been able and willing to sacrifice prices to gain volume, they might have obtained as traffic much of the production, especially farm production, that went into other uses and outlets.

Table 1.- Prices of farm products and of railroad services,
1925-35

Calendar year	Index numbers of farm prices <u>1/</u>	Class I railways <u>2/</u>			
		Freight revenue per ton-mile	Passenger revenue per passenger-mile	Percentage of 1925-29	Percentage of 1925-29
Average		Cents	Percentage of 1925-29	Cents	Percentage of 1925-29
1925-29.....	100	1,083	100	2.89	100
1925	106	1,097	101	2.94	102
1926	99	1,081	100	2.94	102
1927	95	1,080	100	2.90	100
1928	101	1,081	100	2.85	99
1929	99	1,076	99	2.81	97
1930	86	1,063	98	2.72	94
1931	59	1,051	97	2.51	87
1932	44	1,046	97	2.22	77
1933	48	.999	92	2.01	70
1934	61	.979	90	1.92	66
1935	73	.988	91	1.93	67

1/ These measures are affected to some degree by changes in the composition of traffic as well as in rates.

2/ Index number, August 1909 - July 1914 = 100, divided by its 1925-29 average, 147.

Railway figures from reports of the Interstate Commerce Commission.

Table 2.- Physical volume of production: Agriculture and Class I
railroads, 1925-35

Calendar year	Index numbers of agricultural production	Revenue ton-miles	Revenue passenger-miles	Tons of agri- cultural traffic transported
1/	2/			3/
	Percentage of 1925-29	Percentage Millions of 1924-29	Percentage Millions of 1924-29	Percentage Millions of 1925-29
Average 1925-29:	100	433	33.6	140
1925...	96	414	36.0	137
1926...	101	444	35.5	140
1927...	98	429	33.6	140
1928...	103	433	31.6	144
1929...	100	447	31.1	138
:				
1930...	100	383	26.8	132
1931...	106	309	21.9	111
1932...	99	234	17.0	100
1933...	96	250	16.3	98
1934...	90	269	18.0	96
1935...	90	282	18.5	---
:				
:				
:				

1/ Except as noted.

2/ Index number, 1924-29 = 100, divided by its 1925-29 average, 101.

3/ Products of agriculture plus animals and products. Former, years beginning July 1, to correspond more nearly with marketing period.

Railway figures from reports of the Interstate Commerce Commission.

Table 3.- Gross returns from farming and from railroad transportation, 1925-35

Year	Gross income from farm production 1/		Total operating revenues of Class I railways 2/		Revenue of Class I railways from agricultural traffic 3/	
	Million dollars	Percentage of 1925-29	Million dollars	Percentage of 1925-29	Million dollars	Percentage of 1925-29
Average 1925-29	11,749	100	6,207	100	4/ 960	4/100
1925	11,968	102	6,123	99	5/	---
1926	11,480	98	6,384	103	5/	---
1927	11,616	99	6,136	99	5/	---
1928	11,741	100	6,112	98	995	104
1929	11,941	102	6,280	101	926	96
1930.....	9,454	80	5,281	85	903	94
1931	6,968	59	4,188	67	761	79
1932	5,336	45	3,127	50	658	69
1933	6,406	55	3,095	50	635	66
1934	7,265	62	3,272	53	627	65
1935	8,110	69	3,450	56	---	---

- 1/ Receipts from farm products sold plus farm value of products consumed in farm homes. Includes rental and benefit payments, 1933-35.
- 2/ Calendar years.
- 3/ Revenues from products of agriculture, years beginning July 1, plus those from animals and products, years beginning January 1.
- 4/ Average 1928-29.
- 5/ Not available.

Railroad figures from reports of Interstate Commerce Commission.

Table 4.- Returns to capital, labor, and management from farming and from railroad operation, 1925-35

Year	Agriculture					Class I railroads				
	Wages of hired labor	Interest payable	Rent to farmer-landlords	Available for operators' labor and management	Total returns to capital, labor, and management	Compensation of employees	Net operating income	Total returns to capital, labor and management		
	Mil. dolls.	Mil. dolls.	Mil. dolls.	Mil. dolls.	Mil. dolls.	Per-cent-age of 1925-1929	Mil. dolls.	Mil. dolls.	Mil. dolls.	Per-cent-age of 1925-1929
Average:										
1925-29:	---	---	---	---	8,396	100	---	---	3,837	100
1925...	899	723	1,005	6,134	8,761	104	2,646	1,121	3,767	98
1926...	932	717	999	5,520	8,168	97	2,718	1,213	3,931	102
1927...	942	708	1,034	5,637	8,321	99	2,691	1,068	3,759	98
1928...	948	702	1,068	5,596	8,314	99	2,630	1,173	3,803	99
1929...	955	682	1,110	5,669	8,416	100	2,674	1,252	3,926	102
:										
1930...	809	654	911	3,863	5,237	62	2,367	869	3,236	85
1931...	587	626	692	2,393	4,298	51	1,965	526	2,491	65
1932...	380	596	582	1,492	3,050	36	1,437	326	1,763	46
1933...	352	554	597	2,683	4,186	50	1,336	474	1,810	47
1934...	377	472	669	3,468	4,986	59	1,442	466	1,908	50
1935...	---	---	---	---	---	---	3/1,561	500	2,061	54
:										
:										
:										
:										

1/ Cash wages only.

2/ Available from railway operations for interest, rent for leased roads, dividends, etc.

3/ Estimated to be same percentage (95) of total compensation as in 1934.

Railroad figures from reports of Interstate Commerce Commission.

Table 5.- Wage-rates and employment: Agriculture and railroads, 1925-35

Calendar year	Agriculture			Class I railways		
	Workers per 100 reporting farms	Index number of farm wages ^{1/}	Index number of farm wages ^{1/}	Number of employees	Average hourly earnings ^{2/}	Average hourly earnings ^{2/}
	Number	Percentage of 1929	Percentage of 1929	Thousands	Percentage of 1929	Cents
1925.....	102	---	99	1,744	---	58.4
1926.....	113	---	101	1,779	---	58.6
1927.....	113	---	100	1,735	---	59.8
1928.....	113	---	99	1,656	---	61.3
1929.....	114	100	100	1,661	100	62.5
1930.....	108	95	89	1,488	90	63.5
1931.....	105	90	68	1,259	76	64.5
1932.....	90	79	51	1,032	62	59.3
1933.....	^{3/}	---	47	971	58	58.7
1934.....	81	71	53	1,009	61	59.4
1935.....	85	75	58	994	60	64.3

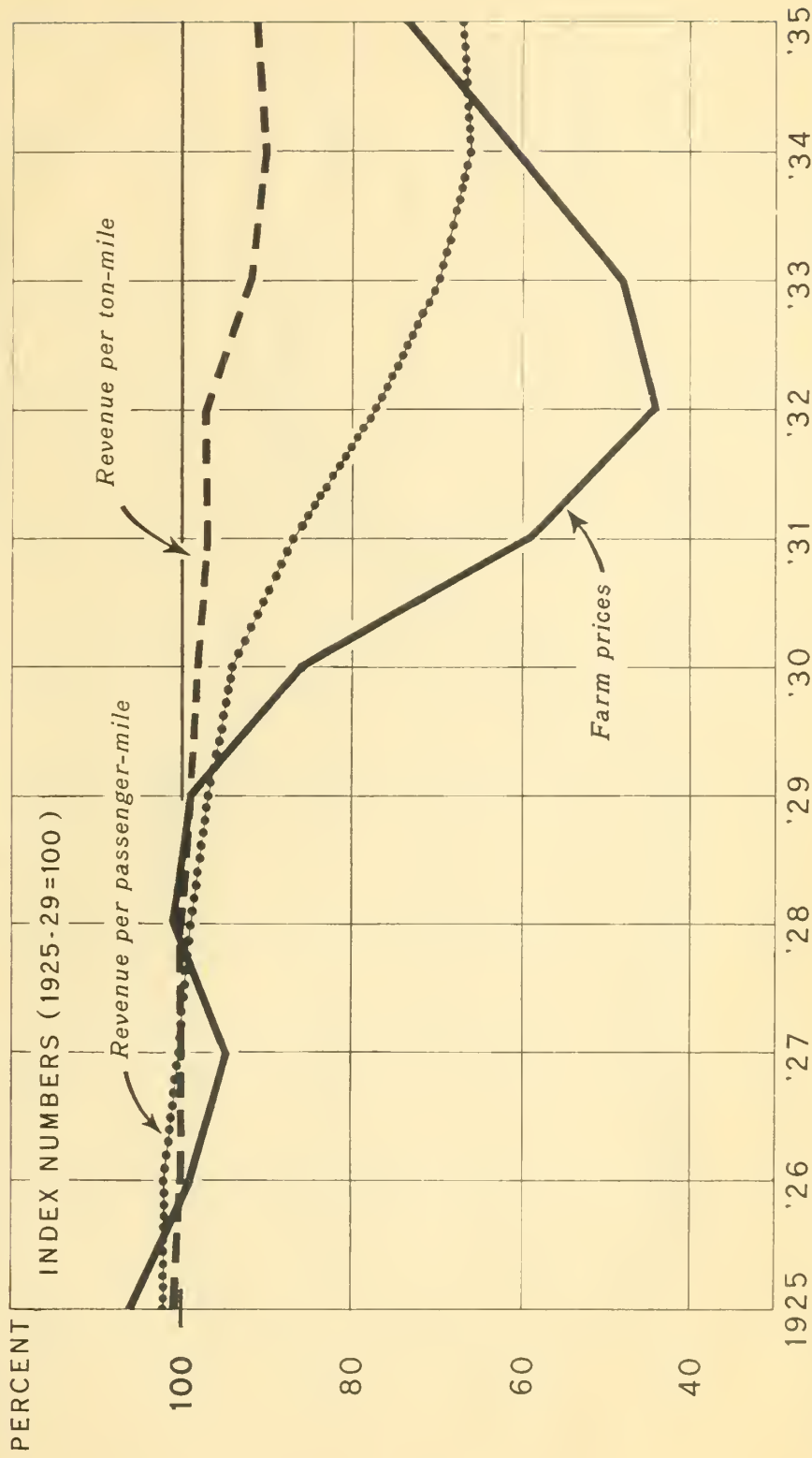
^{1/} Index number, 1914=100, divided by its 1929 level, 170.

^{2/} Average hourly straight-time earnings of employees whose compensation is reported to the Commission on an hourly basis. Excludes switching and terminal companies. This figure exaggerates somewhat the extent to which wage rates were kept up, since workers in lower-paid occupations were dismissed to a greater extent than workers in the higher-paid occupations.

^{3/} Information not collected for full year.

Railway figures from reports of Interstate Commerce Commission.

FARM PRICES AND RAILROAD REVENUES PER PASSENGER-MILE AND PER TON-MILE, 1925-35



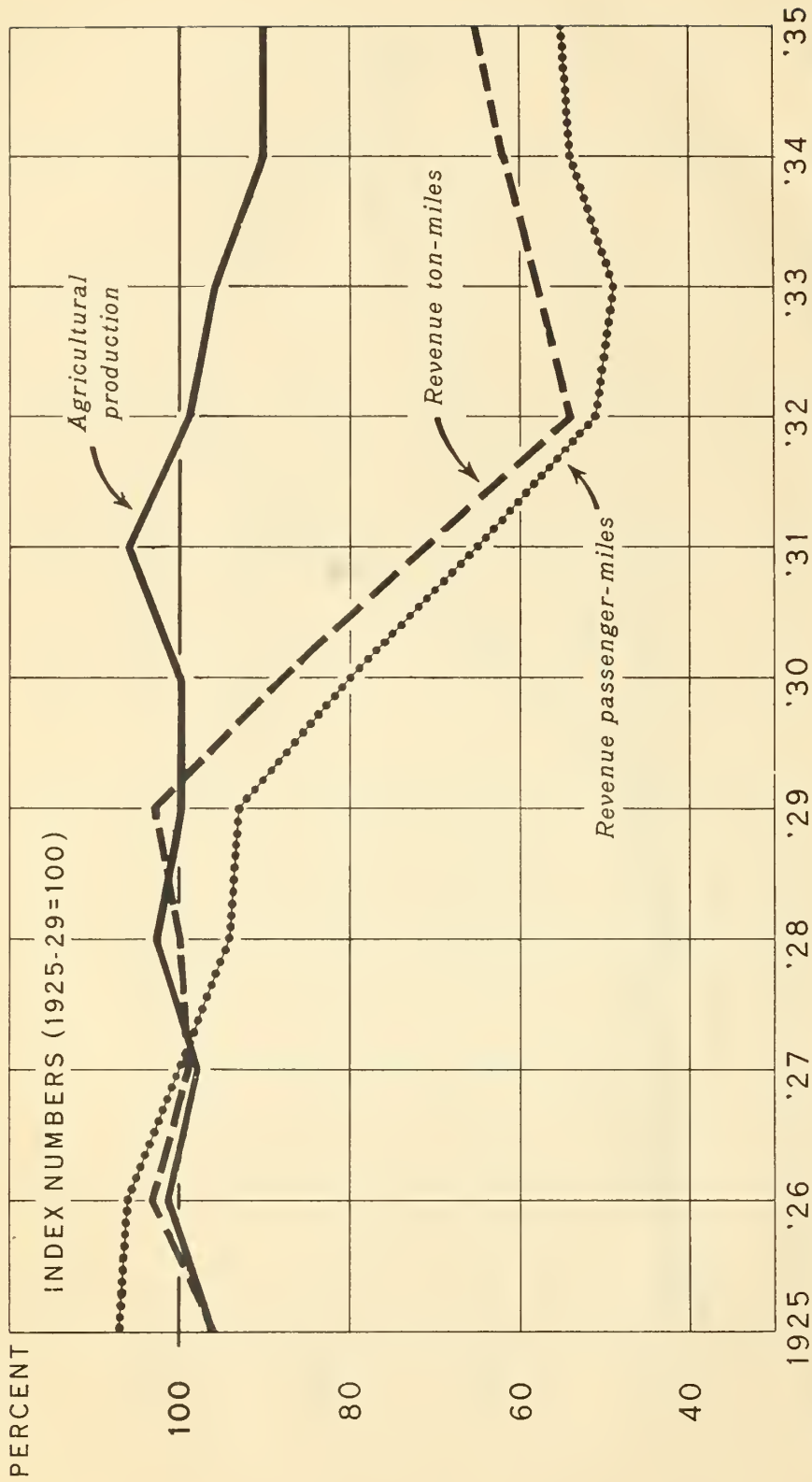
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FIGURE 1.— PRICES RECEIVED BY FARMERS FOR THEIR PRODUCTS DECLINED MUCH MORE DURING THE DEPRESSION THAN PRICES RECEIVED BY THE RAILROADS FOR THEIR SERVICES. RECENTLY, HOWEVER, FARM PRICES HAVE RISEN WHEREAS PRICES OF RAILROAD SERVICES HAVE CONTINUED TO FALL, AND PRICES OF PASSENGER SERVICE HAVE NOW FALLEN RELATIVELY LOWER THAN FARM PRICES.

PHYSICAL PRODUCTION IN AGRICULTURE AND IN RAILROAD TRANSPORTATION, 1925-35



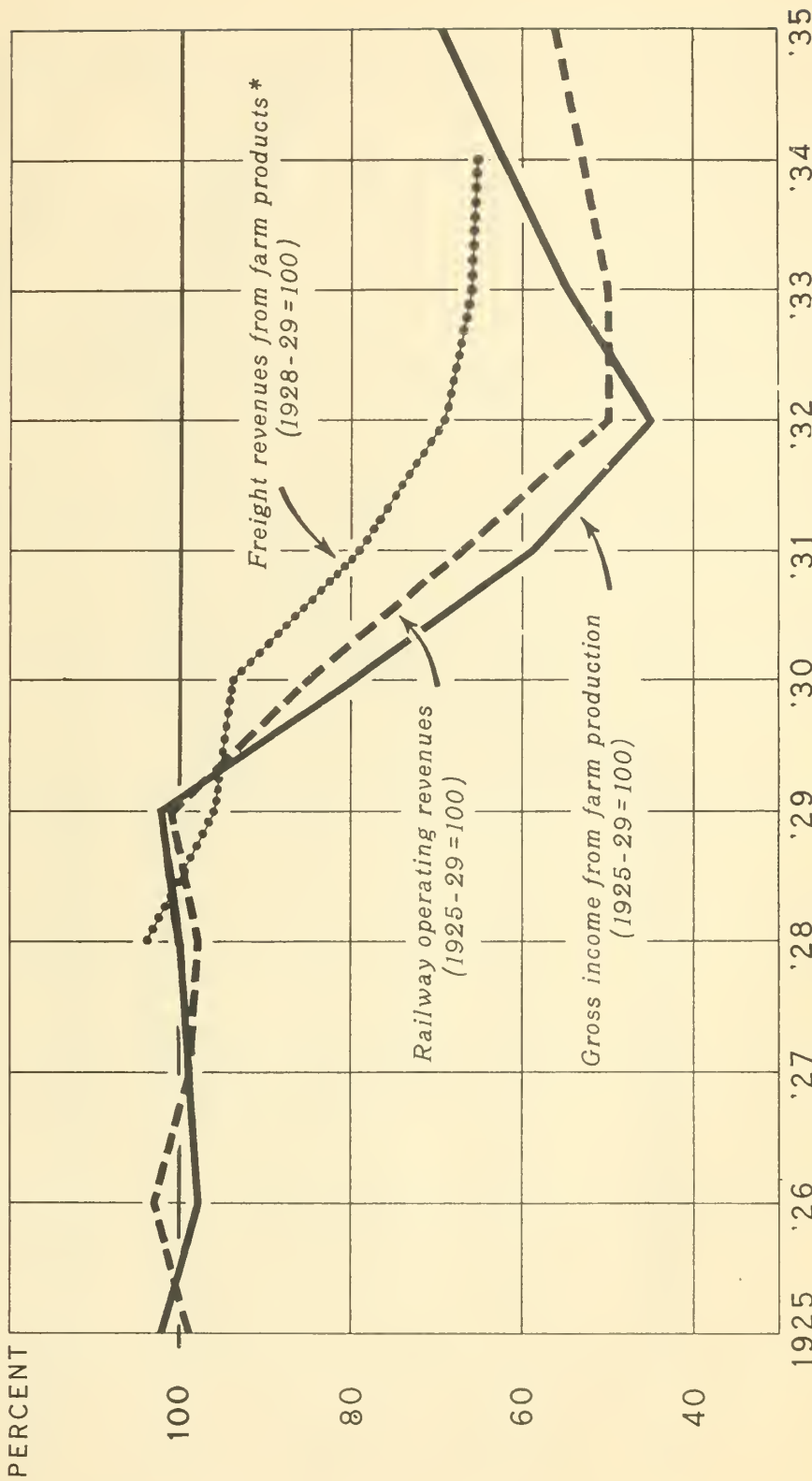
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FIGURE 2.- DURING THE DEPRESSION, FARMERS PRODUCED ABOUT AS MUCH AS BEFORE IT; BUT THE RAILROADS GREATLY REDUCED THEIR PRODUCTION OF FREIGHT AND PASSENGER SERVICE.

GROSS RETURNS FROM FARMING AND FROM RAILROAD TRANSPORTATION, 1925-35

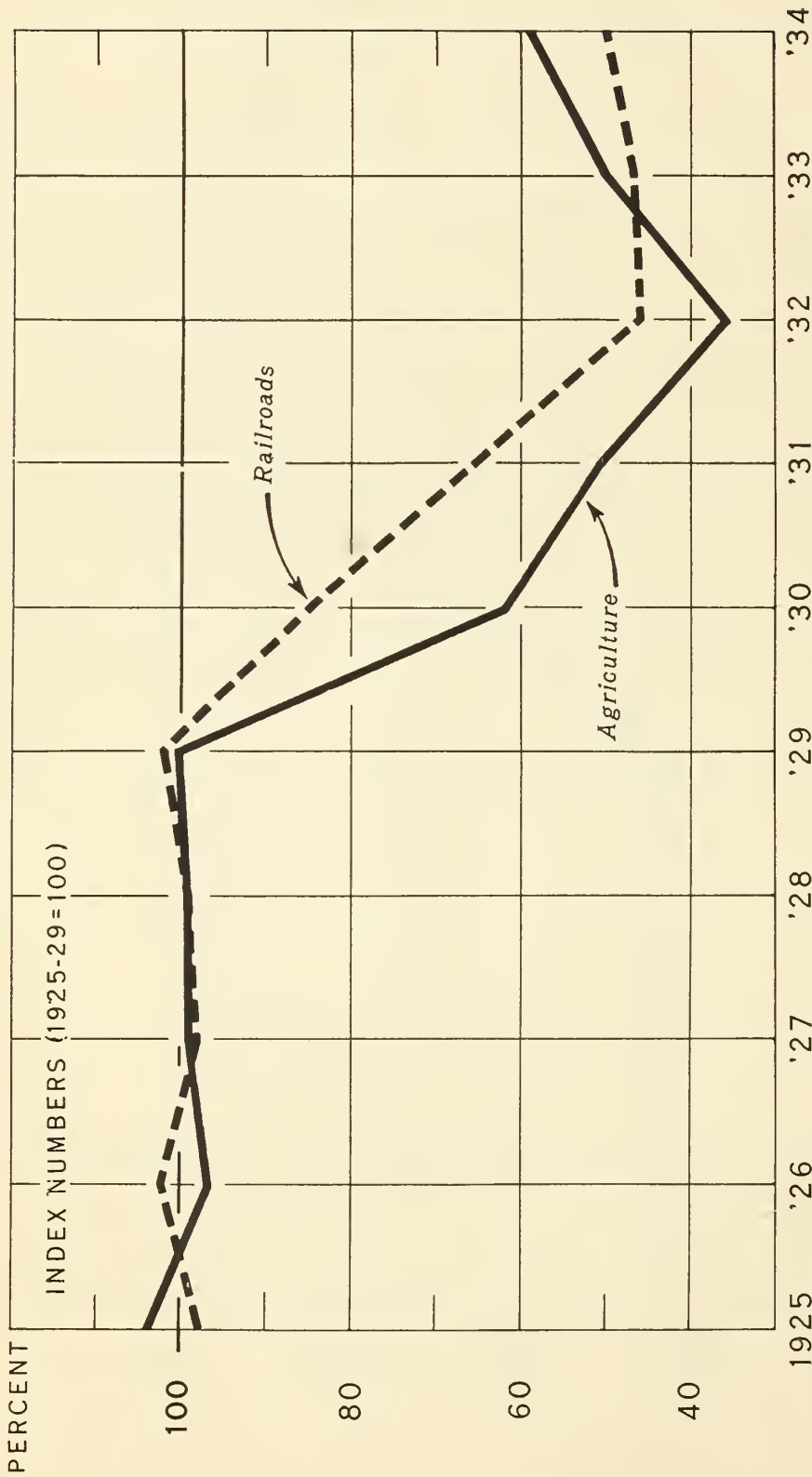


* I. C. C. COMMODITY GROUPS I (CROP YEARS) AND II (CALENDAR YEARS). FIGURES NOT AVAILABLE FOR 1925-27 AND 1935

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FIGURE 3.- THE AGGREGATE RECEIPTS OF FARMERS AND OF THE RAILROADS WERE REDUCED GREATLY AND IN SOMEWHAT SIMILAR PROPORTIONS DURING THE DEPRESSION. THE RECEIPTS OF THE RAILROADS FROM THE TRANSPORTATION OF FARM PRODUCTS, HOWEVER, WERE REDUCED LESS THAN THE RECEIPTS OF FARMERS FROM THEIR PRODUCTION.

INCOME FROM EARNINGS FOR CAPITAL, LABOR, AND MANAGEMENT,
IN THE AGRICULTURAL AND RAILROAD INDUSTRIES, 1925-34

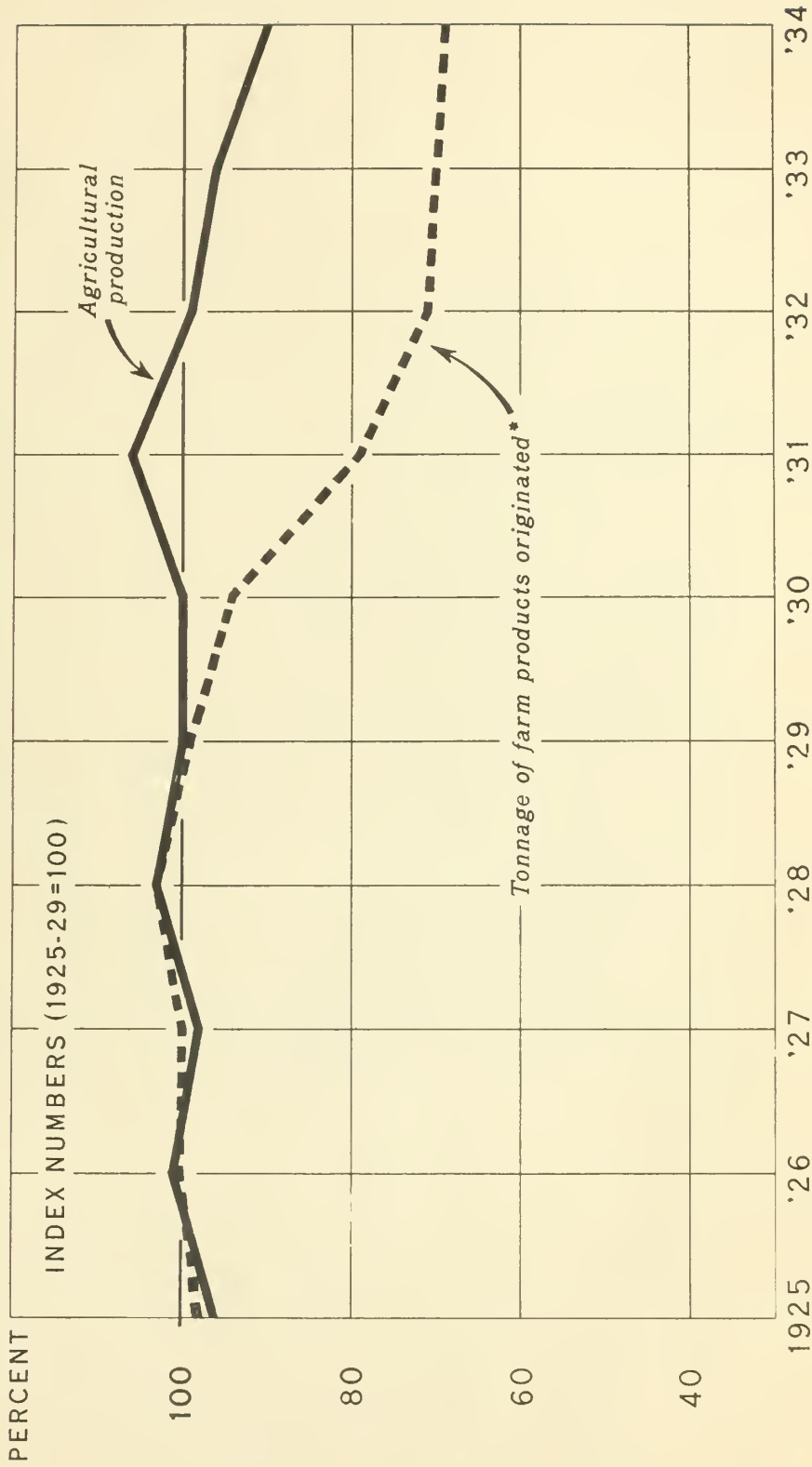


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FIGURE 4.- THE COMBINED RETURN TO CAPITAL, LABOR AND MANAGEMENT FROM FARMING OPERATIONS AND THE COMBINED RETURN FROM RAILROAD OPERATIONS WERE REDUCED GREATLY AND IN ABOUT THE SAME PROPORTIONS DURING THE DEPRESSION.

FARM PRODUCTS: PRODUCTION BY FARMERS AND TONNAGE TRANSPORTED BY RAILROADS, 1925-34



*I. C. C. COMMODITY GROUPS I (CROP YEAR) AND II (CALENDAR YEAR)

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FIGURE 5.- IN THE YEARS BEFORE THE DEPRESSION, FARM PRODUCTION AND THE QUANTITY OF FARM PRODUCTS TRANSPORTED BY THE RAILROADS WERE CLOSELY RELATED. DURING THE DEPRESSION FARM PRODUCTION HAS BEEN FAIRLY WELL MAINTAINED, BUT RAILWAY TRAFFIC IN FARM PRODUCTS HAS DECLINED.

