

porter of these products, because competition with South American countries would have been unremunerative, in view of domestic demand. The War influence was far weaker than in the case of hog and wheat exports. Whereas relative income from exports of hog products during the War and immediate post-War periods exceeded that of the late '90's, income from cattle and beef exports rose only from 4.9 to 7.4 per cent in 1914-18. After the peak of 11.5 per cent in 1918, it declined sharply and by 1925 exports were of as little importance as immediately before the World War.

#### LONG TERM CHANGES IN THE COMPOSITION OF FARM EXPORTS

In large degree the changes in exports of wheat and animal products are responsible also for the long term changes in the composition of total farm exports (Chart 9 and Table 7).<sup>26</sup> Year-to-year fluctuations in wheat, corn, pork and pork products, live cattle and beef products, cotton, and tobacco are shown in Chart 10. Since the changes in the exports of most of these products have been explained in the preceding section, it suffices here to describe briefly the main long term changes in the composition of total farm exports.<sup>27</sup>

Wheat exports amounted to approximately one-fifth of total farm exports until the turn of the century, except for the few years at the end of the '70's when European crop failures led to abnormally high exports of wheat and livestock products. Between 1889-93 and 1909-13 the contribution of wheat exports to total farm exports was cut in half, falling from 21.8 to 10.2 per cent, or from a peak of 29.5 per cent in 1891 to 6.9 per cent in 1910. The War years reinstated wheat to its export position of the '90's. Until the world depression, the percentage, though declining, remained well above the pre-War level. After 1929, as the result of the world depression and of droughts, wheat exports lost sharply in relative importance.

Corn exports declined gradually in importance until the middle '90's, but for a few years prior to 1900 turned upward to reach 10.3 per cent in 1899, an all-time peak. Since then, they have fallen continuously—except for

<sup>26</sup> The composition of farm exports is measured in export values. Figures prior to 1878 are not given because the official export values for those years are expressed partly in gold, partly in currency values.

<sup>27</sup> It should be kept in mind that there is a mutual relation between a percentage increase in one commodity and percentage decreases in others; i.e., such 'measurements of importance' are merely relative.

1937 when unusually large amounts were shipped to Germany—and are now merely a fraction of 1 per cent of total farm exports.

Exports of pork and pork products contributed about 13 per cent to total farm exports at the end of the '70's. European import restrictions reduced their share to 11.8 per cent in 1884-88. The export position was strengthened during the next decade and the percentage reached 14.2 in 1894-98. Owing to the maintenance of large exports of lard, the decrease from the turn of the century to the World War was less conspicuous than in the case of wheat. Foreign demand during the War brought exports of pork and pork products to a record level. The turning point occurred in 1918, when they amounted to nearly one-quarter of total farm exports. The pre-War trend has since been resumed, and at present the contribution to total farm exports is not quite 5 per cent—less than half of what it was shortly before the World War.

The role of exports of live cattle and beef products changed rapidly during the last quarter of the 19th century. Exports rose continuously until about 1900, when they constituted somewhat more than 10 per cent of the total as against 2.6 per cent in 1869-73. By 1913 they had lost the entire gain of the preceding period and had fallen to 1.4 per cent. Even during the World War they rose only slightly, and after 1921 were continuously below the pre-War trough of 1.4 per cent.

From the end of the '70's to the beginning of the century, cotton exports fluctuated between 30 and 40 per cent of total farm exports. The decline in the export of staple foodstuffs and meat products after 1900 enhanced the relative importance of cotton exports, which, immediately before the War, were more than one-half of total farm exports. From 1914 to 1922 cotton exports were less important but later returned to their pre-War position.

Tobacco exports were between 3 and 5 per cent of total farm exports until the end of the World War. Their relative share has since increased nearly fivefold; they are now nearly one-fifth of all farm exports.

Fruit exports rose in relative importance during the entire period although prior to the post-War agricultural depression the five-year averages of exports never exceeded 3 per cent. After the world depression started, their level remained steadily at about 10 per cent of total farm exports; during the last few years their importance has been greater than that of wheat and animal products exports combined.

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## The Composition of Gross Farm Income since the Civil War

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#### SUMMARY

CHANGES in the composition of farm income<sup>1</sup> may reflect past shifts in the production pattern of the agricultural economy or they may indicate the need for further adjustment. Since the process of adaptation and adjustment in agriculture is slow and tedious, even changes of seemingly minor extent are significant. One of the more important changes since the Civil War is the decline in the share of wheat from 11.2 per cent in 1869-73 or 13.8 per cent in 1879-83 to 5.7 per cent in 1934-37. In contrast, the share of dairy products, which shortly after the Civil War was somewhat less than that of wheat, was in the 1930's from three to four times as large as that of wheat. In 1934-37 dairy products contributed as much to total gross farm income as wheat and cotton combined, which in 1869-73 were twice as important as dairy products. The share of eggs in total farm income has tripled, from 2.5 to 7.5 per cent; that

<sup>1</sup> Farm income, as used in this study, is gross income, the value, at farm prices, of all products consumed in farmers' households or sold to the nonfarm economy; i.e., the value of total farm output at farm prices after the elimination of the major sources of duplication—the value of feedstuff fed to livestock on farms and of the part of the individual crops used for seed. Income from exports of each important farm product is evaluated at farm prices.

of tobacco has more than doubled, from 1.4 to 3.3 per cent; that of chickens almost doubled, from 2.3 to 4.2 per cent.

The increase in the share contributed by dairy products, chickens, eggs, fruit, and tobacco is also significant in that it may be taken to reflect a rising standard of living of the population. The share of meat animals declined from 30.6 to 24.8 per cent, and that of cotton and cottonseed from 12.6 to 10.4 per cent; but these changes have been overshadowed by short-lived increases or decreases.

For most farm products the bulk of income is derived from the domestic market. This is particularly true for dairy products, fruit, chickens, eggs, and the staple foodstuffs other than wheat.

Foreign demand plays, or played formerly, an important role in cotton, tobacco, wheat, pork and pork products, and beef products; and changes in exports seem to be largely responsible for the major shifts in importance of these commodities. Exports contributed most to total income from wheat (except for the abnormal highs during the World War) in 1900, when 43 per cent of income was from exports. The percentage exported then declined to an all-time low of less than 10 in the early 1930's. Up to the World War cotton

farmers received rather constantly two-thirds of their income from foreign markets. Since then the share from exports has declined and is now well below one-half. Exports contributed one-half to total income from tobacco in the '80's. This share gradually receded until the World War, gained slightly from then to the early '20's, but thereafter resumed its downward trend. Increase in foreign demand for pork and pork products more than tripled the income share from exports to a peak in 1901. Except for a short-lived export boom during the World War—a record high was reached in 1919—it decreased continuously and is now at the lowest level since 1870.

The decline of exports is even more pronounced for live cattle and beef products: exports contributed over 16 per cent to total income at the turn of the century; they are now negligible, contributing a fraction of 1 per cent.

To the gradual changes in domestic and foreign demand characteristic before 1914 the American farm economy could accommodate itself, but not to the abrupt reversal of the World War and immediate post-War trend. In fact, it is probable that the agricultural depression of the '20's stemmed largely from the difficulty of ready adaptation.

#### CHANGES IN THE COMPOSITION OF TOTAL FARM INCOME

Through an analysis of the composition of total farm income long term changes in the internal structure of American agriculture are revealed. Since data on farmers' production costs are inadequate for earlier years and net income cannot be estimated for individual commodities, we use recent estimates of gross farm income since 1869.<sup>2</sup> From these we gain a picture of the changing role of the chief farm products in the aggregate productive pattern of American agriculture, from which, in turn, we must derive our impression of shifts in their importance as sources of total net income. The changing role of foreign markets is treated at greater length than that of the domestic market because changes

<sup>2</sup> These annual data on gross farm income will be published in a Department of Agriculture Technical Bulletin: *Gross Farm Income, Indexes of Farm Production and of Farm Prices in the United States, 1869-1937*, by Frederick Strauss and L. H. Bean. This monograph, a study by the United States Department of Agriculture in cooperation with the National Bureau of Economic Research, will describe in detail the data and the methods used in their derivation. The series on total gross farm income used in this Bulletin refer to crop years. In the income monograph this series is designated as 'gross income for crop years (including estimates for 'omitted' products)'. The data are not adjusted for changes in inventory values of livestock. These long time series on total gross farm income and on income from individual products are continuous and intended chiefly for use in long term analyses and as supplementary data to the current series the Bureau of Agricultural Economics is now preparing.

in the export share of some important farm products seem to have had an important effect upon the composition of total gross farm income.<sup>3</sup> The explanation of these changes, which is merely implied in some of the comments, would require elaborate analysis not possible here. Among the factors that might be considered are the growth and changing composition of the population, technological advances, rises and declines in national income, as well as changes in the physical output of agriculture itself and price trends. The last-mentioned, namely, the change in trends of farm production and prices and their relation to farmers' gross income is being studied separately.

When we disregard year-to-year fluctuations and look at consecutive five-year averages of the percentages that individual farm products contribute to gross farm income the long term variations in its composition stand out more clearly (Chart 1).<sup>4</sup> Since we are especially interested in long term variations the figures referred to hereafter in the text are five-year averages, except where otherwise indicated. The timing of the fluctuations is brought out more exactly in Chart 2 and Table 1 where the annual percentages indicate that the fluctuations are not regular but oscillate, sometimes quite violently, about a varying level. This chart, which is on a semi-logarithmic scale, indicates also the relative magnitude of the long term changes in percentage shares. Both charts are simplified by the omission of all farm products except the largest contributors to total farm income. But from these few products farmers derived between three-fourths and four-fifths of their income throughout the period. In striking contrast to nonagricultural fields, where new products are continually being introduced, no new commodities have assumed any importance in the farm economy since the Civil War. Among the commodities contributing the other quarter or fifth of income, truck crops and soy beans alone reveal changes of interest. Soy bean production has expanded recently, but still accounts for merely a fraction of 1 per cent of total farm income. Although income from truck crops cannot be estimated for the earlier period, from the available evidence it seems to

<sup>3</sup> The absolute figures on income derived from the domestic and foreign markets will be given in a forthcoming publication of the United States Department of Agriculture entitled *Changing Trends of Farm Production, Farm Prices, and Gross Farm Income since the Civil War*. They are omitted here in order not to overburden this Bulletin.

<sup>4</sup> Obviously the share that individual farm products contribute to total gross farm income is affected by factors associated with the particular farm product as well as by changes in importance of the other farm products. The percentages in this Bulletin express, therefore, the relative importance of the individual products.

have amounted to less than 2 per cent up to the end of the World War. Within the last twenty years its relative importance has about tripled; it now constitutes somewhat more than 4 per cent of farm income.

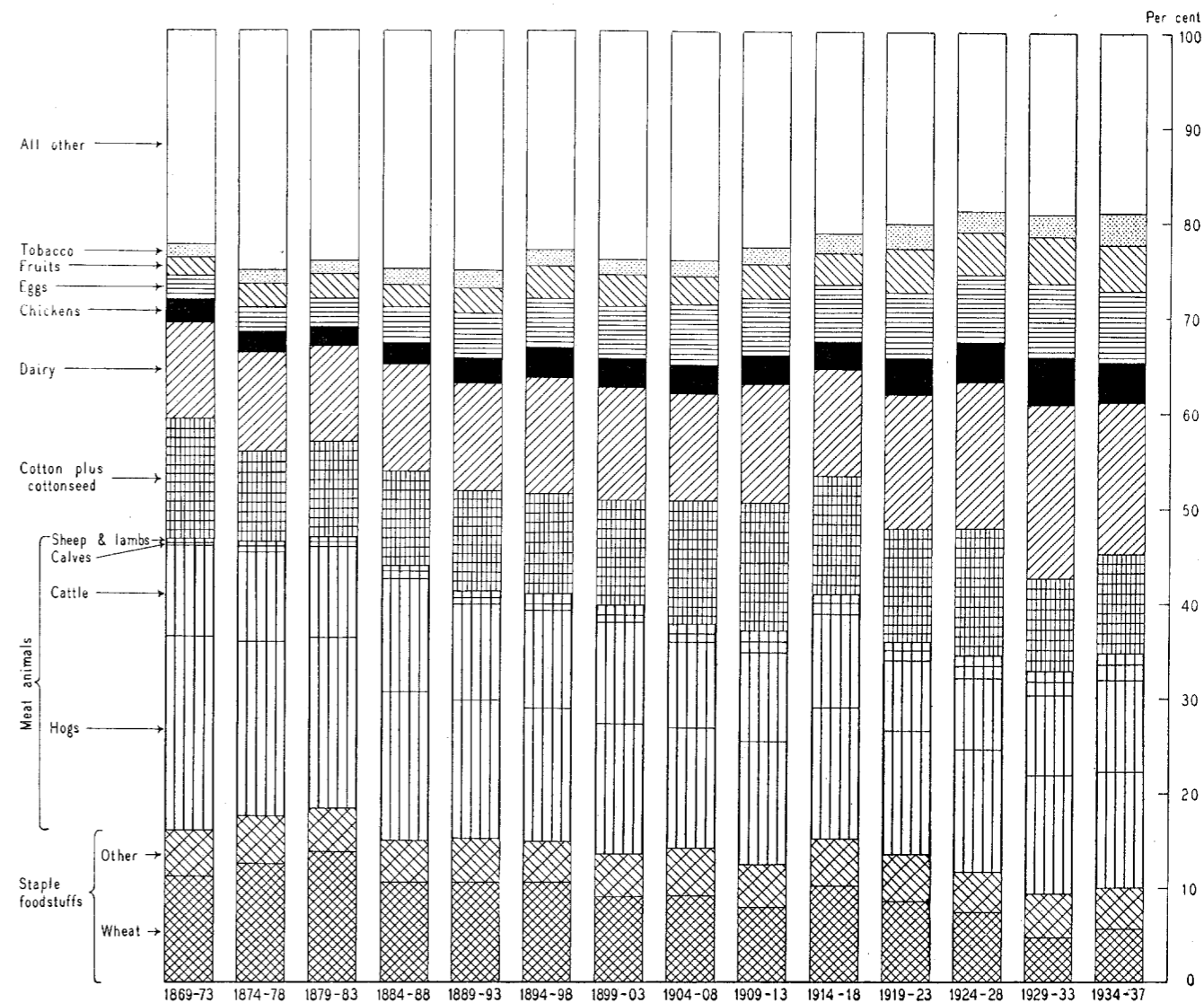
In appraising the extent of the changes even during 70 years, one should bear in mind the peculiar natural and institutional rigidities of agricultural production which usually impede rapid and sharp expansion or contraction in output. The unavoidable difficulties of adjustment that accompany and follow such major changes as have been experienced in American agriculture cannot of course be brought out in a description of long term shifts. Moreover, data referring to the entire United States do not indicate regional and technical changes within individual agricultural branches, which may at times be the cause, at other times the

effect of changes in the agricultural economy as a whole.<sup>5</sup>

One of the most significant of the long term changes in the composition of farm income is the decline in the importance of wheat. For a decade or so after the Civil War the share from wheat continued to increase. After rising from 11 to 14 per cent, it fell sharply, and until about the close of the century remained at 10.5 per cent. Thereafter, except for a short interruption during the World War, it decreased continually. After the immediate post-War reconstruction period the decrease was accelerated and since 1929 the share of wheat in total income has been only half as much as it was 50 or

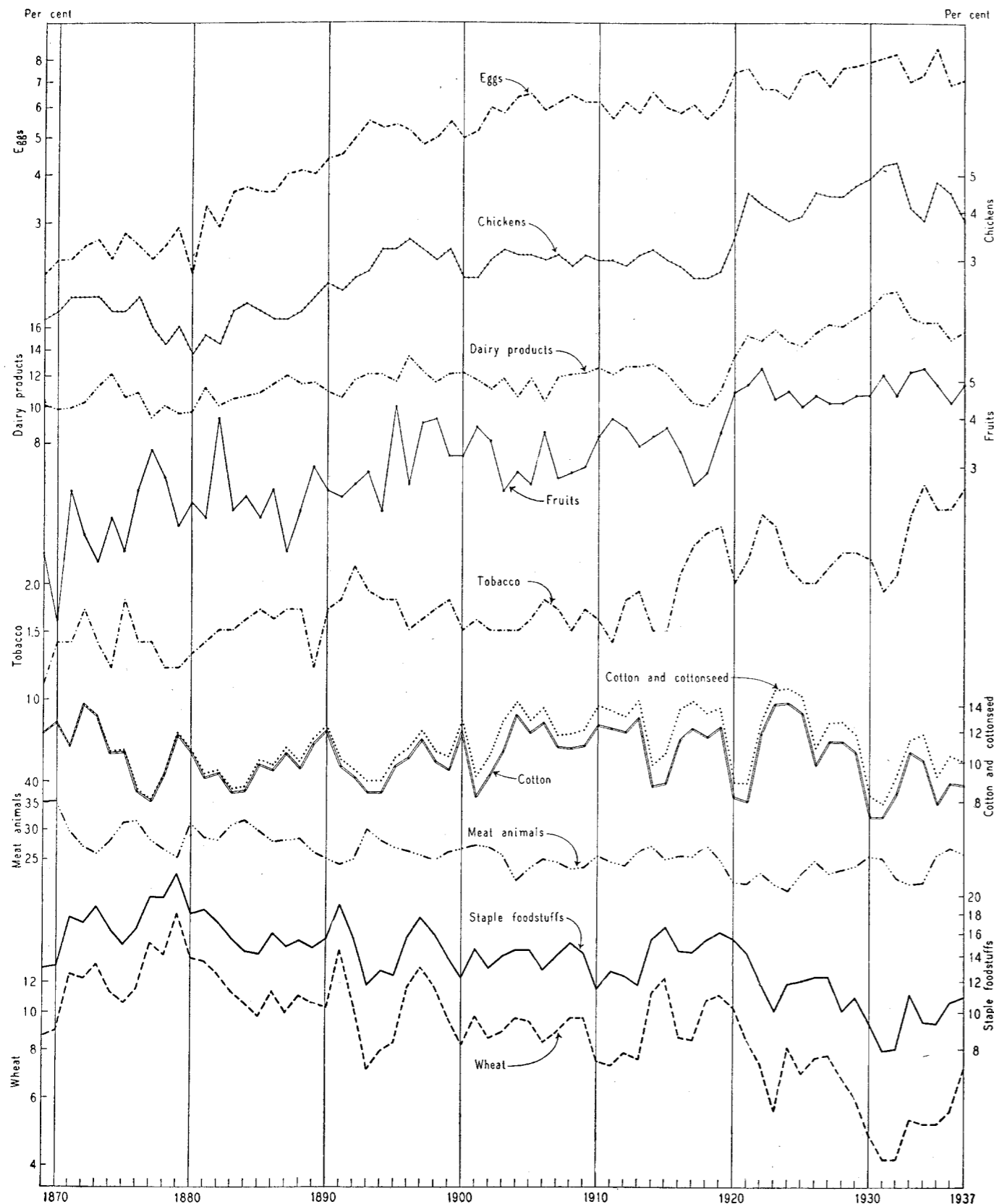
<sup>5</sup> The effects of such changes were treated in detail in *Bulletin 67, Technical Progress and Agricultural Depression*.

Chart 1  
CONTRIBUTION OF SELECTED FARM PRODUCTS TO TOTAL GROSS FARM INCOME  
FIVE YEAR AVERAGES, 1869-1937





## CONTRIBUTION OF SELECTED FARM PRODUCTS TO TOTAL GROSS FARM INCOME, 1869 - 1937



## Composition of Gross Farm Income

after the World War, it increased to 5 per cent. Income from fruits as well as chickens was about as important as that from wheat during the depths of the agricultural depression. They contributed to total income only about one-fifth as much as wheat in the decade after the Civil War. The share of income from eggs rose more than that from any other product, trebling over the sixty years.

This brief description of long term changes in the composition of total farm income can no more than indicate the extent of the shifts in the importance of the major branches of American agriculture since the Civil War. The reason for such shifts is by no means clear. Changes in gross income from individual commodities and therefore changes in their shares of the total may be due to relative production changes, relative price changes, or to both. If they are the result of changing trends in production, they may reflect a sound adjustment to shifts in demand or an adaptation to natural advantages or technical improvements in production. If long term relative price changes are the determining factor, a decrease in the relative importance of any one commodity may be a sign of lack of adaptation to changed demand conditions. Clarification is possible only through separate analysis of production and price changes.<sup>6</sup> The data on the changes in the composition of total income are the net residue of all such shifts, whether they originate in the domestic or foreign market.

## CHANGES IN THE COMPOSITION OF FARM INCOME FROM THE DOMESTIC MARKET

What changes would have occurred in the composition of farm income had American farmers obtained their entire income from the domestic market? Or, to word the question differently, are the changes in total farm income due chiefly to factors connected with the supply conditions of and changes in domestic demand for American farm products, or to changes in foreign supply conditions and in foreign demand for American products?

The net influence of the domestic market cannot be isolated, since the prices of some important staple crops are determined in world markets and conditions in foreign markets may at times counterbalance, at other times intensify domestic changes. We may only inquire how the composition of income derived from the domestic market has actually changed. For this purpose we have calculated income from the domestic market by eliminating income from exports from total income (Table 2).<sup>7</sup> Since the elimination of exports does not eliminate the effect of world markets on domestic

prices, and since the magnitude of domestic income far surpasses income derived from exports, we may expect that the relative changes in individual shares will not be much different whether they are percentages of domestic or of total income. Comparison of Charts 2 and 4 brings out the similarity in the long term trends of the individual shares quite clearly. However, the greater importance of exports in some products than in others affects the magnitude of the contribution of each product to total income derived from the domestic market. Chart 3 depicts the order of importance of the individual products marketed domestically or consumed in farmers' households.

As a source of farm income from the domestic market (Charts 3 and 4) the contribution of wheat declined from about 11 per cent in the 1870's to 5 per cent in the 1930's. This decline, however, was hardly perceptible from the '90's to the World War. But a definite and rapid decrease in the relative importance of income from wheat set in after the World War. Even the lowest pre-War share (6.8 per cent in 1913) was never again attained. The 1932 share of 4.2 per cent was only about half as much as immediately before and during the War. Part of the decline is due to the severe fall in the price of wheat in terms of total farm products between 1920 and 1931 relative to other farm prices. This accentuated the relative decline that has persisted since the middle '70's and notably affected the contribution from wheat during the agricultural depressions from the middle '70's to the middle '90's and after the World War. But since producers' costs have decreased by reason of more progressive production methods the decrease in relative gross income from wheat is probably sharper than the decrease in relative net income, for which data are not available. And since income from the domestic market is a composite measure which is influenced by absolute and relative price movements, quantitative demand, foreign conditions, and other factors, the movement of relative domestic income from wheat cannot be explained entirely by changes in consumers' habits and requirements, nor is it an accurate index of such changes. Declining per capita consumption and rate of population growth, the changing age composition and size of families doubtless contributed to the downward trend in the income received from the home market. These factors making for a decline could be offset only by an upward trend in the purchasing power of wheat (expressed in terms of the prices of other farm products) following a satisfactory adjustment of the production structure.

<sup>6</sup> This analysis is undertaken in the publication referred to in footnote 3.

<sup>7</sup> The method of computing income from exports is described in more detail in the next section.



(with a peak of 21.6 per cent in 1931 and 1932). The circumstances connected with this notable increase indicate that it was partly due to conditions prevailing during the severe agricultural depression, which affected the staples-producing branches most seriously: there was a 40 per cent increase in the purchasing power of dairy products between 1919 and 1932. But per capita consumption, especially of fresh milk and cream, also increased. According to Department of Agriculture figures, per capita consumption of dairy products rose from 760 pounds (milk equivalent) immediately before the War to a peak of 830 pounds in 1931.<sup>8</sup>

From the middle '70's to the early '90's, income from fruits rose from about 2 to 3 per cent of total farm income from the domestic market; from then until the World War it fluctuated about 3.5 per cent; after the War a level of about 4.5 per cent was maintained. But

the total hides a significant shift: since the middle '90's income from orchard fruits has gradually decreased, while citrus fruits have become more and more important. Income from the latter rose continuously from 0.2 per cent at the close of the 19th century to 1.4 per cent at present.

Relative income from chickens fluctuated between 2 and 3 per cent until the late '80's. During the '90's it increased to about 4 per cent, hardly changing further until the end of the World War. With the beginning of the agricultural depression in the early '20's it increased to about 5 per cent. Relative income from eggs, on the

<sup>8</sup> Cf., for instance, Agricultural Land Requirements and Resources, Part III of the Supplementary Report of the Land Planning Committee (National Resources Board, Government Printing Office, 1935); and J. P. Cavin, Consumption of Agricultural Products, *The Agricultural Situation*, January 1939.

Chart 3

CONTRIBUTION OF SELECTED FARM PRODUCTS TO DOMESTIC GROSS FARM INCOME FIVE YEAR AVERAGES, 1869 - 1937

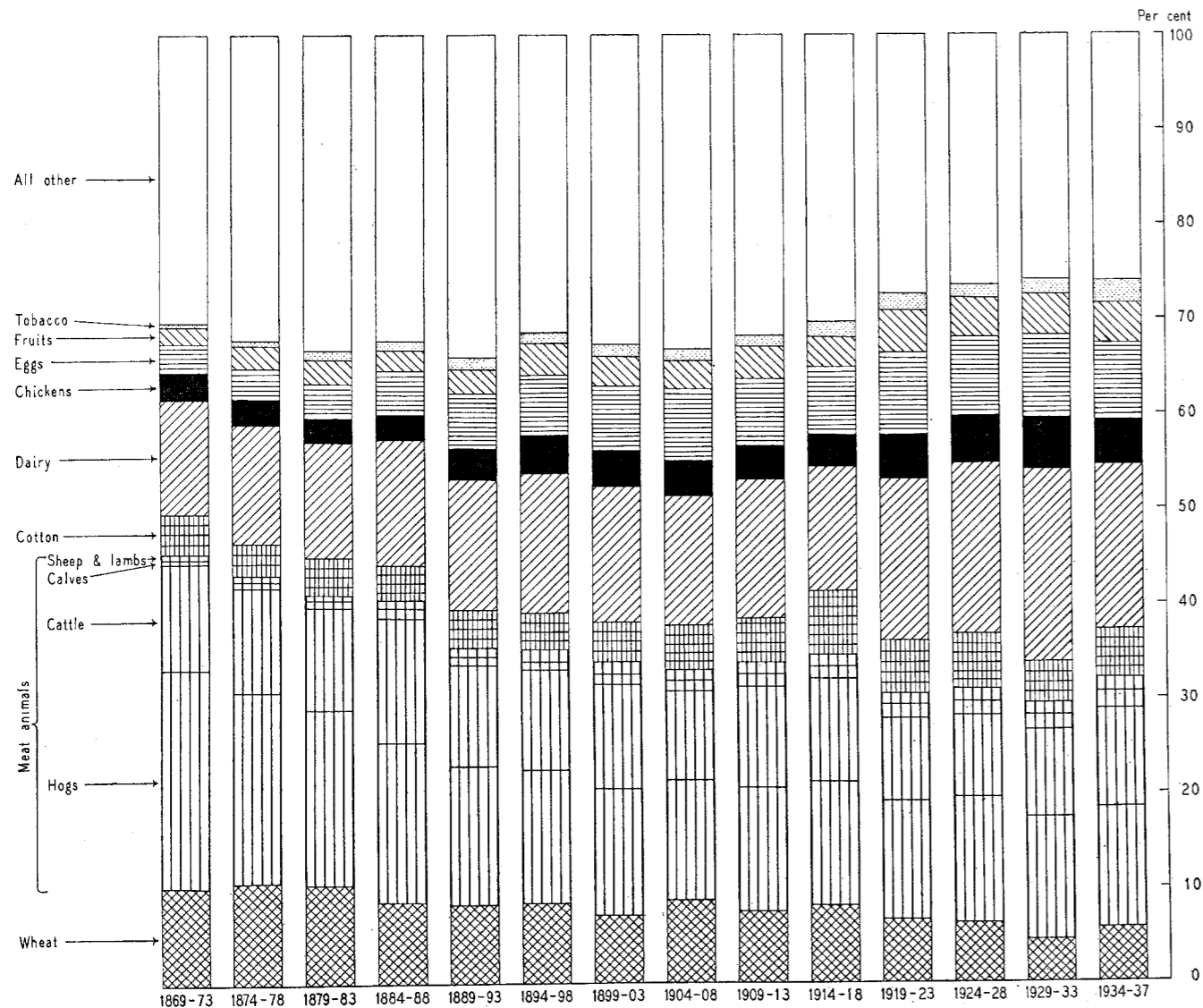
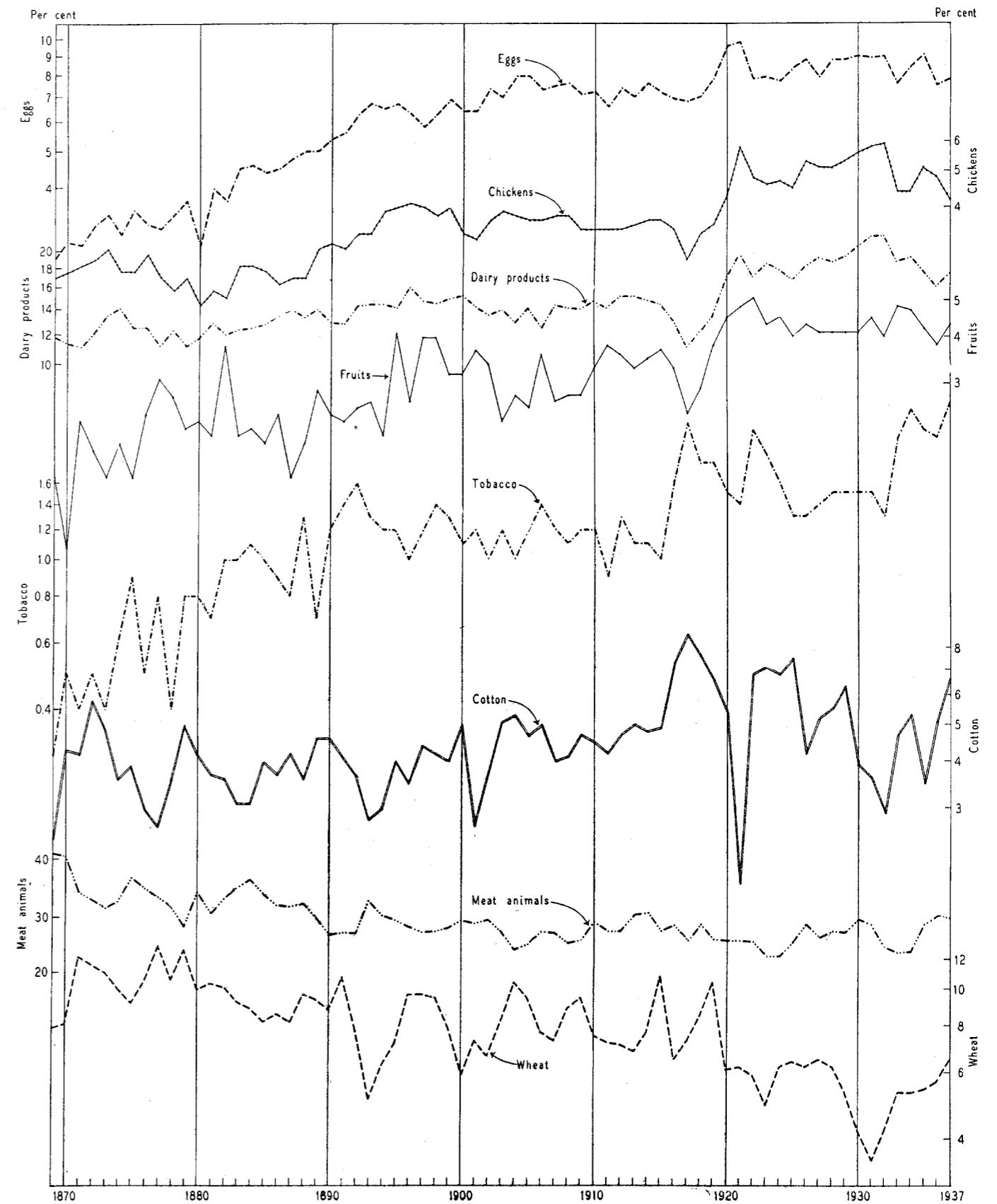


Chart 4

CONTRIBUTION OF SELECTED FARM PRODUCTS TO DOMESTIC GROSS FARM INCOME, 1869 - 1937



other hand, rose from about 3 per cent in the '70's to about 8.5 per cent after the War. During the last decade income from chickens alone approximated domestic income from wheat or from cotton; income from eggs approached the combined domestic income from wheat and cotton.

#### THE CHANGING CONTRIBUTION OF FARM EXPORTS TO TOTAL FARM INCOME

Long term fluctuations in total farm exports depend in large degree upon international economic transactions of the United States, which have little direct connection with the supply of American farm products or with potential foreign demand for them.<sup>9</sup> Shifts in the balance of payments of the United States since the Civil War have strongly influenced the amount of agricultural products exported and have thus been immediately responsible for some of the major long term changes in the composition of American farm income. Up to the World War the characteristic feature of the American balance of payments, resulting from the debtor position of the United States, was the huge net outflow of interest and amortization payments and dividends on securities held by foreigners, augmented by a debit balance from tourist expenditures and immigrant remittances. These deficits necessitated the maintenance of merchandise export surpluses. Technically at least, the balance of payments facilitated farm exports throughout this period. During the World War the United States changed rapidly from a debtor to a creditor nation. This meant that commodities could not be exported, as formerly, to settle the unfavorable credit balance, but that the quantity of farm products exported must depend upon either import surpluses from other commodities or loans to foreign countries.

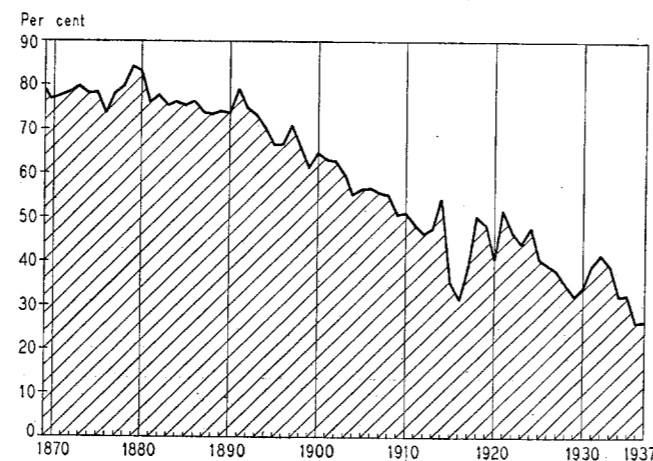
As far as exports of agricultural commodities are concerned, international transactions fall into four stages. Up to the '90's the supply of agricultural products in the United States and the import needs of European countries for staple farm products favored meeting the deficit by agricultural exports; the latter amounted to 75-80 per cent of all exports (Chart 5). Agricultural exports then gradually ceased to be the most economical means of balancing the deficit, as is indicated by their sharply decreasing relative importance.<sup>10</sup> Their share in the total value of exports decreased continuously to about 50 per cent immediately

<sup>9</sup> Cf., for instance, *Agricultural Exports in relation to Land Policy*, Part II of the Supplementary Report of the Land Planning Committee (National Resources Board, 1935); and R. B. Schwenger, *United States Balance of International Payments in relation to the Problems of Agricultural Exports*, *Foreign Crops and Markets*, July 22, 1935.

<sup>10</sup> The absolute value of farm exports was still increasing during this period.

before the War. During this second stage the more profitable investment opportunities in industry made it advantageous to devote an increasing proportion of our national resources and energies to nonagricultural pursuits. Agriculture tended to adjust itself to the demands arising from increased industrialization. The World War checked this tendency. Foreign demand for American farm products caused a rapid increase in their export and a temporary reversal in the pre-War trend of the contribution of agricultural to total exports. This increase in exports, combined with sharply rising prices, was an important factor in making possible the amortization of foreign debts and in altering radically the international credit position of the United States. The relatively large amounts of farm exports could be maintained during the decade following the War only by a continuation of short and long term lending to foreign countries whose agricultural and industrial resources were still depleted by War economy. With the world depression the fourth stage in the development of the balance of payments was begun. Since further capital export was out of the question, the only means by which huge exports of agricultural products could have been continued would have been a net import of goods other than competitive agricultural commodities. The difficulties become obvious if one takes into account that, in addition to tariff restrictions and the agricultural policies of foreign countries, the composition of total exports continued its pre-War trend in the early '20's (cf. Chart 5) and at the onset of the depression farm exports made up only slightly over 30 per cent of all exports. The pre-War trend of farm exports was thus continued in this fourth stage but with one important difference. Before the War the productive structure of American agriculture had apparently been able to adjust itself to the slowly changing international situation, whereas the sudden reversal of the War and immediate

Chart 5  
CONTRIBUTION OF AGRICULTURAL EXPORTS TO  
TOTAL EXPORTS, FISCAL YEARS, 1869-1937

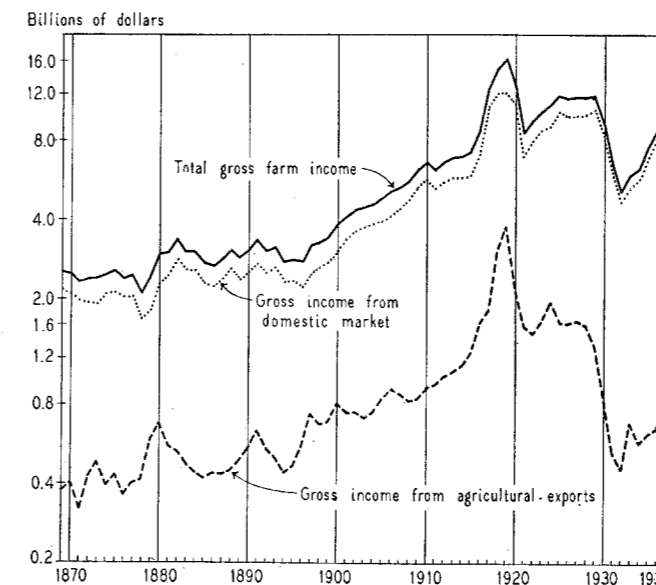


post-War movement could not be met by sufficiently rapid changes. This brief evaluation of the influence of long term changes in the balance of payments may facilitate analysis of changes in the importance of income from farm exports.

In estimating income from exports of the more important agricultural commodities—wheat and wheat flour, cotton, tobacco, corn, pork and pork products, and live cattle and beef products—and income from exports of all agricultural commodities, 1869-1937, we evaluated exports at farm prices.<sup>11</sup> From 1878 to 1937 the export value, at export prices, of these selected commodities represented from 75 to 90 per cent of the value of all farm exports. Prior to 1878 their share cannot be determined from foreign trade statistics, since the official export values are expressed partly in gold, partly in currency values. Our estimate of the total value of agricultural exports at farm prices, or gross income from total farm exports, is based on the assumption that the differential between export and farm prices for the agricultural products that are not evaluated individually (making up 10-25 per cent of the total value at export prices) about equals that for the products that are evaluated individually (making up 75-90 per cent). We further assume that the share of the six selected commodities in the total during 1869-77 was similar to that after 1877, about 90 per cent. Although this method cannot yield accurate measures of gross income from exports, it makes possible close approximations.

If one neglects the short term fluctuations in the share of farm income from foreign markets (Charts 6

Chart 6  
TOTAL GROSS FARM INCOME, FARM INCOME  
FROM THE DOMESTIC MARKET AND  
FROM EXPORTS, 1869-1937



and 7 and Tables 3 and 4), it moved very nearly in the same four stages as the balance of payments of the United States. The first stage of rising importance of exports lasted until the end of the 19th century. During this quarter century the tremendous expansion in production, particularly of cereals and meat products following the settlement of the public domain and the improvement and cheapening of farm machinery and transportation, put American farmers in a position to export at prices with which European agriculture could not compete.<sup>12</sup> Because of specific influences emanating

<sup>11</sup> We attempted to include manufactured tobacco with raw tobacco and manufactured cotton goods with raw cotton. But the technical difficulties are so great that it was impossible to arrive at useful approximations. Neither the Department of Agriculture nor the Department of Commerce release data including manufactured tobacco or cotton in terms of the raw products contained.

From an unpublished tabulation, prepared by Rodney Whitaker in the Department of Agriculture, we conclude that the export of cotton manufactures (in terms of raw cotton) amounted to between 1.5 and 4.5 per cent from 1892 to 1938, except during the World War when a peak of 7.3 per cent was reached in 1919.

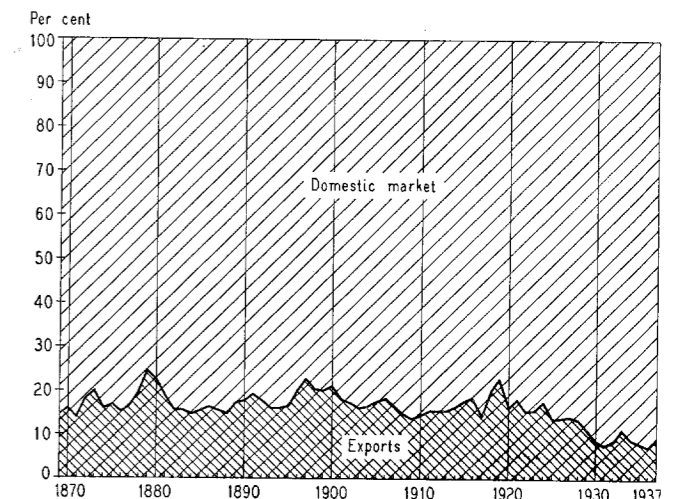
The use of rough conversion factors for manufactured tobacco products makes it appear that during 1908-37 their exports (in terms of raw tobacco) amounted to a fraction of 1 per cent even during the World War, when they increased sharply in absolute terms.

In addition, the export value at farm prices was computed for dairy products and fruits, but was used only to estimate income from the domestic market.

<sup>12</sup> Some experts are of the opinion that the low prices were ruinous even to American agriculture and that only the rise in land values compensated to a certain extent for the low prices.

<sup>13</sup> The B.A.E. index of the volume of agricultural exports (1910-14 = 100) rose from 40 in 1875 to 46 in 1876, to 50 in 1877, and to 62 in 1879.

Chart 7  
CONTRIBUTION OF EXPORTS AND OF THE  
DOMESTIC MARKET TO TOTAL GROSS  
FARM INCOME, 1869-1937



from European countries, the rise in the export share was not continuous but the underlying tendency was upward. In 1869 farm exports contributed 14.8 per cent to total farm income. Crop failures and livestock losses in Europe in 1876, 1877, 1879 could be made up by tremendous exports from the United States.<sup>18</sup> The export share of American farm products rose rapidly to an all-time peak in 1879 of nearly one-quarter of farm income. This extraordinary level was not maintained. In the early '80's, when several European countries restricted certain imports, the share contributed by exports receded to a level little higher than that of the early '70's. After 1884 the share of income from exports continued—except for year-to-year fluctuations—its briefly interrupted rise to a peak in 1897 only slightly below the record share of 1879. During the second stage the entire relative export gain of the first stage disappeared and the average for 1909-13 was the same as the export share in 1869 and below the average for 1869-73.

Of course the movement of the share of income de-

rived from the export of all agricultural commodities does not fully reflect the extent of the changes in the relative shares derived from the various commodities exported as they affected and were affected by internal shifts in the American farm economy. From the beginning of the '70's until the World War income contributed by cotton exports remained nearly constant, tending to mitigate the fluctuations in income from all farm exports. The long term changes in the relative importance of farm exports become clearer when we consider also the share of income from total farm exports, excluding cotton exports, in total farm income, excluding cotton (Table 5). Income from non-cotton exports rose from 5.7 per cent of total income from products other than cotton in 1869 to an all-time peak of 18.7 per cent in 1879. Disregarding the exceptional situation at the end of the '70's we find that during the first stage after the Civil War, it rose from 8.7 (average 1869-73) to 13.7 per cent (average 1894-98), the peak being reached in 1897. In the non-cotton farm economy the

TABLE 3. Total Gross Farm Income, Farm Income from the Domestic Market and from Exports, Crop Years, 1869-1937 (millions of dollars)

	GROSS FARM INCOME				GROSS FARM INCOME		
	From the domestic market	From exports	Total		From the domestic market	From exports	Total
1869	2,177	377	2,554	1903	3,733	712	4,445
1870	2,111	403	2,514	4	3,832	750	4,582
1	1,989	320	2,309	5	3,948	844	4,792
2	1,944	429	2,373	6	4,139	918	5,057
3	1,927	481	2,408	7	4,408	876	5,284
4	2,080	391	2,471	8	4,722	829	5,551
5	2,119	431	2,550	9	5,332	843	6,175
6	2,029	362	2,391				
7	2,039	401	2,440	1910	5,613	933	6,546
8	1,606	413	2,109	1	5,200	949	6,149
9	1,817	588	2,405	2	5,568	1,022	6,590
				3	5,754	1,061	6,815
1880	2,287	672	2,959	4	5,743	1,132	6,875
1	2,441	554	2,995	5	5,831	1,274	7,105
2	2,835	523	3,358	6	7,034	1,631	8,665
3	2,572	472	3,044	7	10,742	1,819	12,561
4	2,571	440	3,011	8	11,911	3,030	14,941
5	2,299	418	2,717	9	12,604	3,760	16,364
6	2,243	436	2,679				
7	2,384	433	2,817	1920	11,035	2,134	13,169
8	2,617	454	3,071	1	6,997	1,565	8,562
9	2,371	491	2,862	2	7,984	1,460	9,444
				3	8,700	1,630	10,330
1890	2,511	543	3,054	4	9,041	1,938	10,979
1	2,702	637	3,339	5	10,192	1,615	11,807
2	2,501	542	3,043	6	9,870	1,606	11,476
3	2,637	501	3,138	7	9,926	1,640	11,566
4	2,325	443	2,768	8	9,964	1,576	11,540
5	2,345	465	2,810	9	10,441	1,307	11,748
6	2,222	558	2,780				
7	2,480	738	3,218	1930	8,344	809	9,153
8	2,617	668	3,285	1	6,148	529	6,677
9	2,747	685	3,432	2	4,680	457	5,137
				3	5,241	678	5,919
1900	3,053	814	3,867	4	5,666	567	6,233
1	3,383	743	4,126	5	6,959	616	7,575
2	3,625	746	4,371	6	8,060	645	8,705
				7	8,289	842	9,131

decline in the relative importance of exports during the second stage is much more rapid than in the farm economy as a whole. The immediate pre-War average of 7.6 per cent (1909-13) was below the level of the early '70's and about half the share in the middle '90's. The reasons for the reversal of trend lie partly in the changed industrial situation of the United States, partly in the changed competitive position of American agriculture. Rapid industrialization augmented domestic consumption requirements for American farm products sharply; in some branches expansion of production could not even keep abreast of the rising domestic demand. Since fertile lands were no longer available at low cost, newer countries such as Canada, Argentina, and Australia were able to step gradually into the place the United States had occupied during the first stage.

The outbreak of the World War changed these conditions suddenly. Income from farm exports became in-

creasingly important again and by 1919 almost reached the all-time peak of 1879 (Table 4). This rise lasted just one decade; the export share increased from 14.9 (1909-13) to 17.8 per cent (1919-23). If cotton is excluded, the abrupt rise after 1914 becomes even more pronounced. The share of income from non-cotton exports more than doubled between 1913 and 1919, but the pre-War trend has since been resumed (Table 5). The post-War decline in income from non-cotton exports was sharper than in that from all farm exports. At present, agricultural exports contribute only 8 per cent to total farm income; to farm income other than from cotton, exports contribute less than 5 per cent.

These four stages in the movement of income from total farm exports define with reasonable accuracy the history of the contribution of foreign markets to the agricultural economy as a whole. The long term changes in the contribution of exports to total farm in-

TABLE 4. Percentage Contribution of the Domestic Market and of Exports to Total Gross Farm Income, Crop Years, 1869-1937

	PERCENTAGE OF TOTAL GROSS FARM INCOME FROM			PERCENTAGE OF TOTAL GROSS FARM INCOME FROM		
	Domestic market	Exports	5 yr. avg.	Domestic market	Exports	5 yr. avg.
1869	85.2	14.8		1904	83.6	16.4
1870	84.0	16.0		5	82.4	17.6
1	86.1	13.9	83.4	6	81.8	18.2
2	81.9	18.1		7	83.4	16.6
3	80.0	20.0		8	85.1	14.9
				9	86.3	13.7
4	84.2	15.8		1910	85.7	14.3
5	83.1	16.9		1	84.6	15.4
6	84.0	15.1	83.2	2	84.5	15.5
7	83.6	16.4		3	84.4	15.6
8	80.4	19.6				
				4	83.5	16.5
9	75.6	24.4		5	82.1	17.9
1880	77.3	22.7		6	81.2	18.8
1	81.5	18.5	80.7	7	85.5	14.5
2	84.4	15.6		8	79.7	20.3
3	84.5	15.5				
				9	77.0	23.0
4	85.4	14.6		1920	83.8	16.2
5	84.6	15.4		1	81.7	18.3
6	83.7	16.3	84.7	2	84.5	15.5
7	84.6	15.4		3	84.2	15.8
8	85.2	14.8				
				4	82.3	17.7
9	82.8	17.2		5	86.3	13.7
1890	82.2	17.8		6	86.0	14.0
1	80.9	19.1	82.4	7	85.8	14.2
2	82.2	17.8		8	86.3	13.7
3	84.0	16.0				
				9	88.9	11.1
4	84.0	16.0		1930	91.2	8.8
5	83.5	16.5		1	92.1	7.9
6	79.9	20.1	80.8	2	91.1	8.9
7	77.1	22.9		3	88.5	11.5
8	79.7	20.3				
				4	90.9	9.1
9	80.0	20.0		5	91.9	8.1
1900	79.0	21.0	81.6	6	92.6	7.4
1	82.0	18.0		7	90.8	9.2
2	82.9	17.1				
3	84.0	16.0				

<sup>1</sup> 4 year average.



come may seem to have been rather small prior to the World War, if one disregards some of the wide year-to-year fluctuations. During the first stage of rising importance, 30 years, it increased from 16.6 to 19.2 per cent; in the second stage of relatively declining exports, 15 years, it fell from 19.2 to 14.9 per cent; during the War and immediately after, the pre-War trend was reversed and the share increased from 14.9 to 17.8 per cent. Compared with the moderate changes from the Civil War to the World War, the violent decline during the fourth, post-War, stage, from 17.8 to 8.4 per cent, makes obvious the necessity of fundamental adjustments.

The large share contributed to total farm exports by the six selected commodities, 75-90 per cent, and the strongly stabilizing influence of the steady level of

cotton exports during the first two stages, indicate that to some of these farm branches the shifts in the contribution of exports must have been of great importance. To obtain a better picture of what lies behind the changes in the dependence of the farm economy as a whole on total farm exports prior to the World War, the long term shifts in the income from the export of the products most affected are analyzed.

*Cotton*

From the middle '70's, when the effects of the dislocations resulting from the Civil War had been largely overcome, up to the World War, a little more than two-thirds of total income from cotton came from exports of raw cotton (Chart 8 and Table 6). The year-to-year fluctuations have been rather wide, but the level

TABLE 5. Total Gross Farm Income, excluding Cotton, Income from Farm Exports, excluding Cotton, and Percentage that Income from Non-Cotton Exports is of Total Non-Cotton Income, Crop Years, 1869-1937

	PERCENTAGE INCOME FROM NON-COTTON EXPORTS IS OF TOTAL NON-COTTON INCOME			5 yr. avg. (4)	PERCENTAGE INCOME FROM NON-COTTON EXPORTS IS OF TOTAL NON-COTTON INCOME			5 yr. avg. (4)
	TOTAL NON-COTTON INCOME (1)	INCOME FROM NON-COTTON EXPORTS (2)	(3)		TOTAL NON-COTTON INCOME (1)	INCOME FROM NON-COTTON EXPORTS (2)	(3)	
1869	2,251	128	5.7					
1870	2,194	173	7.9					
1	2,056	150	7.3	8.7	1904	3,979	350	8.8
2	2,038	206	10.1		5	4,222	460	10.9
3	2,091	259	12.4		6	4,421	489	11.1
4	2,211	205	9.3		7	4,709	469	10.0
5	2,280	243	10.7		8	4,954	425	8.6
6	2,190	222	10.1	11.3	9	5,495	411	7.5
7	2,248	264	11.7		1910	5,736	373	6.5
8	1,915	280	14.6		1	5,396	416	7.7
9	2,123	397	18.7		2	5,803	497	8.6
1880	2,646	455	17.2		3	5,930	466	7.9
1	2,721	371	13.6	14.1	4	6,282	812	12.9
2	3,046	314	10.3		5	6,478	931	14.4
3	2,791	300	10.7		6	7,673	1,152	15.0
4	2,759	268	9.7		7	11,031	1,222	11.1
5	2,450	242	9.9		8	13,203	2,196	16.6
6	2,424	263	10.8	9.8	9	14,344	2,572	17.9
7	2,522	238	9.4		1920	12,100	1,658	13.7
8	2,777	253	9.1		1	7,886	1,025	13.0
9	2,543	280	11.0		2	8,328	887	10.7
1890	2,686	291	10.8		3	8,876	797	9.0
1	3,015	423	14.0	11.9	4	9,418	994	10.6
2	2,765	356	12.9		5	10,230	806	7.9
3	2,878	315	10.9		6	10,355	902	8.7
4	2,538	282	11.1		7	10,258	847	8.3
5	2,538	286	11.3		8	10,238	818	8.0
6	2,497	353	14.1	13.7	9	10,503	716	6.8
7	2,851	479	16.8		1930	8,494	472	5.6
8	2,955	447	15.1		1	6,193	269	4.3
9	3,106	468	15.1		2	4,713	167	3.5
1900	3,404	503	14.8		3	5,289	294	5.6
1	3,792	499	13.2	13.0	4	5,604	238	4.2
2	3,967	477	12.0		5	6,985	268	3.8
3	3,928	386	9.8		6	7,941	294	3.7
					7	8,336	592	7.1

<sup>1</sup> 4 year average.

has remained remarkably constant, despite a rapid increase in foreign cotton production.<sup>14</sup> As late as 1913 approximately 60 per cent of all cotton consumed in the world was American and the geographic export distribution was favorable from the viewpoint of the balance of payments. The World War ended the constancy of the export share abruptly, and the pre-War export position has not been regained. During the War cotton consumption in the United States rose to one-fourth above the 1909-13 level,<sup>15</sup> partly because more cotton manufactures were exported. But raw cotton exports to the Central Powers stopped and those to England and France decreased 15 and 25 per cent respectively. Apparently the world textile industries were being drastically altered; exports to Japan increased 78

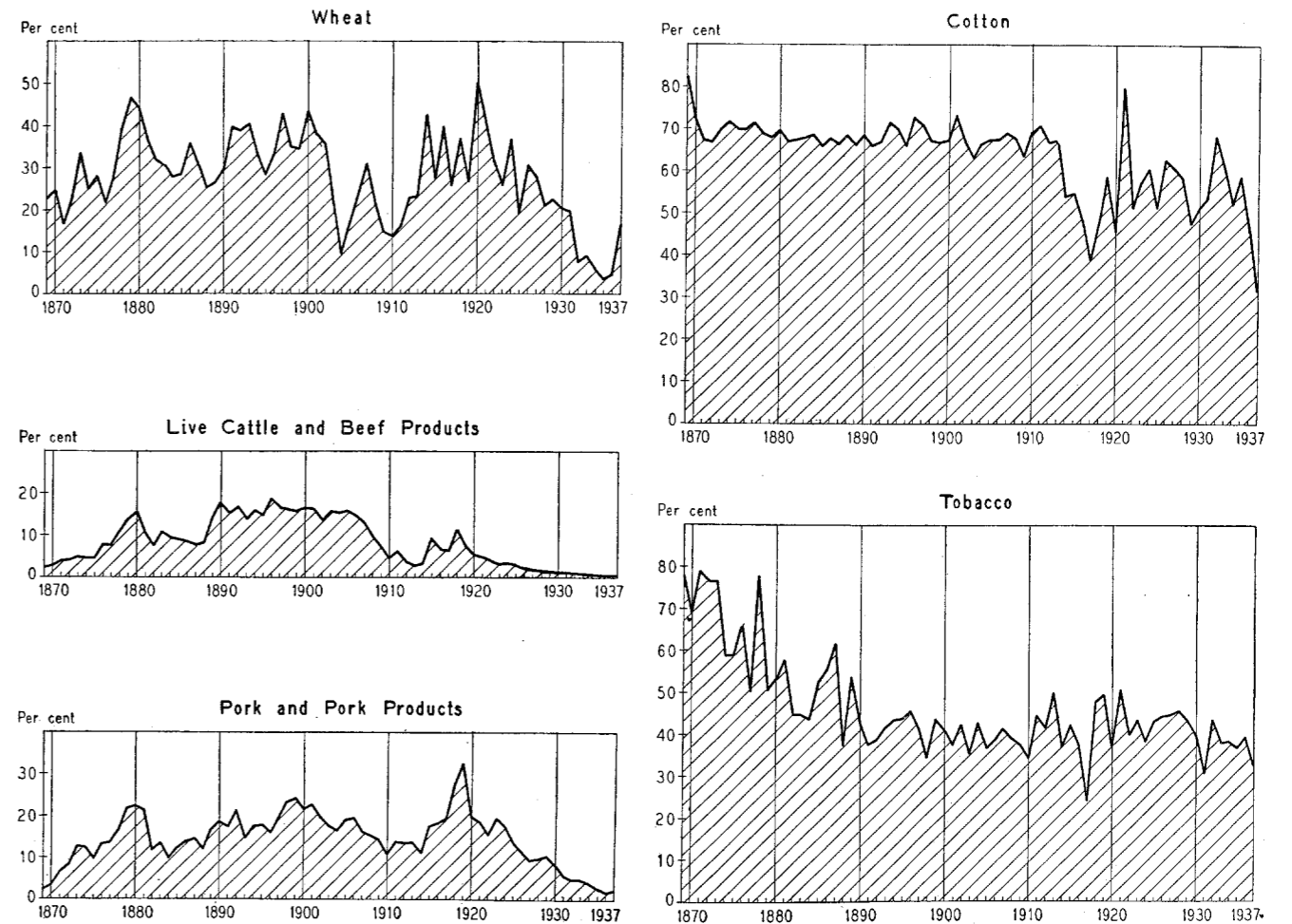
<sup>14</sup> Cf. L. H. Bean, *Export Prospects for Southern Farm Products*, *Southern Economic Journal*, July 1939.

<sup>15</sup> Cf. M. R. Cooper, *Some Effects of the World War on Cotton* (U. S. Department of Agriculture, mimeographed report, June 1937), p. 4.

per cent between 1909-13 and 1914-17. The net result was that the share of income derived from exports fell from 67.5 (average 1909-13) to 48.8 per cent (average 1914-18). Despite rising exports to Japan, only half of this decrease was made good during the decade of the '20's because of a price differential in favor of competing growths for European consumption.<sup>16</sup> With the beginning of world depression additional difficulties had to be faced, causing a further decline in production. The export ratio is now below 50 per cent. Disturbances in the international balance of payments, largely responsible for the shrinkage in exports to Germany and Italy, the rapid expansion of production in competing countries such as Brazil, induced chiefly by the relatively sharper price decline of other farm products there, and the tremendous increase in the production of substitute textile products seem to be the chief reasons for the declining tendency of the last decade.

<sup>16</sup> Cf. L. H. Bean, *Changing Trends in Cotton Production and Consumption*, *Southern Economic Journal*, April 1939.

Chart 8  
CONTRIBUTION OF EXPORTS OF SELECTED FARM PRODUCTS TO GROSS FARM INCOME FROM EACH 1869-1937



## Tobacco

Because of variations in the proportions of the differently priced types exported and consumed in the United States, the share of income from tobacco derived from exports cannot be accurately determined. The official physical volume statistics do not separate exports of stemmed and unstemmed tobacco. To compensate for the large part of exports that consists of stemmed tobacco and the lower moisture content of export tobacco owing to redrying, we raised the official export-volume data 10 per cent<sup>17</sup> and applied farm prices to obtain an estimate of income from exports (Chart 8 and Table 6).

The decline in the share of exports in income from

<sup>17</sup> Information secured by B. S. White and Claudia Thomson of the Bureau of Agricultural Economics.

tobacco to 50 per cent in the early '80's was due to adjustments following Civil War dislocations. The further decline to a little over 40 per cent in the '90's seems to have been caused by a sharp rise in per capita consumption of total tobacco in the United States—from 2.9 pounds in 1880 to 4 pounds in 1890, owing chiefly to a very rapid increase in cigarette consumption from 10 per capita in 1880 to 40 in 1890 and 60 in 1895.<sup>18</sup> From the '90's to the World War, income from exports hovered about 40 per cent. During the War the importance of exports diminished slightly. Immediately after the War a peak of 44 per cent was reached. The percentage exported then gradually declined again, partly because of preferential tariffs and import restrictions in

<sup>18</sup> Cf. Export Trade in and By-Product Uses of Tobacco, 76th Cong., 1st Sess., Senate Doc. 39, March 20, 1939, p. 13.

TABLE 6. Percentage Contribution of Exports of Selected Farm Products to Gross Farm Income from Each, Crop Years, 1869-1937

	WHEAT		COTTON		TOBACCO		PORK AND PORK PRODUCTS		LIVE CATTLE AND BEEF PRODUCTS		WHEAT		COTTON		TOBACCO		PORK AND PORK PRODUCTS		LIVE CATTLE AND BEEF PRODUCTS			
	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.	5 yr. avg.		
1869	22.4		82.2		77.7		2.2		2.2			1904	9.7		66.3		42.8		16.2		15.2	
1870	24.2		71.9		69.0		3.3		2.7			5	16.7		67.3		36.5		19.0		15.9	
1	16.7	23.8	67.1	71.6	78.9	75.6	6.6	6.6	3.8	3.5		6	23.8	20.5	67.4	67.5	38.5	39.4	19.4	17.2	14.7	13.7
2	22.4		66.7		76.3		8.2		4.0			7	30.9		69.0		41.1		16.1		13.0	
3	33.3		69.9		76.3		12.7		4.8			8	21.2		67.6		37.9		15.1		9.6	
4	24.7		71.5		58.8		12.3		4.4			9	14.9		63.5		37.3		14.1		7.3	
5	27.9		69.8		58.8		9.6		4.5			1910	13.4		69.1		34.2		10.9		4.7	
6	21.6	28.1	69.7	70.2	66.5	62.4	13.1	13.0	7.6	7.0		1	16.0	18.0	70.8	67.5	44.4	41.4	13.9	13.3	6.2	4.9
7	27.2		71.2		50.2		13.6		7.6			2	22.8		66.7		41.3		13.6		3.6	
8	39.2		68.8		77.8		16.5		11.0			3	23.0		67.2		49.9		13.8		2.9	
9	46.4		67.9		50.4		21.6		13.4			4	42.4		54.0		36.9		11.2		3.5	
1880	44.0		69.4		53.3		22.2		15.2			5	27.3		54.7		42.1		17.5		9.3	
1	36.6	37.8	66.8	67.8	57.7	50.2	21.1	17.9	10.9	11.6		6	39.5	34.4	48.3	48.8	37.5	37.7	18.1	18.8	6.6	7.4
2	31.8		67.1		44.9		11.5		7.4			7	25.7		39.0		24.0		19.3		6.3	
3	30.3		67.8		44.8		13.3		10.9			8	36.9		48.0		47.9		27.8		11.5	
4	27.7		68.3		43.6		9.9		9.1			9	26.8		58.8		49.4		32.5		7.4	
5	28.2		65.8		52.8		12.1		9.0			1920	50.1		44.5		37.0		19.9		5.4	
6	35.7	29.3	67.7	67.2	55.2	50.1	13.9	12.4	8.4	8.5		1	40.3	34.9	79.9	58.4	50.6	44.0	18.2	21.1	4.9	5.0
7	30.1		66.2		61.6		14.3		7.6			2	31.4		51.3		39.8		15.3		4.0	
8	25.0		68.2		37.2		11.9		8.2			3	25.9		57.3		43.3		19.4		3.1	
9	26.1		66.0		53.7		16.6		14.2			4	36.7		60.5		38.1		17.3		3.4	
1890	29.2		68.4		42.3		18.4		17.6			5	19.0		51.3		43.0		13.9		3.0	
1	39.6	34.7	65.9	67.7	37.5	42.8	17.3	17.6	15.2	15.5		6	30.5	27.0	62.8	58.7	44.1	43.0	11.6	12.4	2.1	2.4
2	38.6		66.9		38.7		21.1		16.7			7	27.6		60.6		44.5		9.4		2.0	
3	40.1		71.4		41.7		14.6		13.9			8	21.0		58.2		45.4		9.9		1.6	
4	33.0		69.9		43.2		17.4		15.9			9	22.4		47.5		43.1		10.6		1.4	
5	28.1		65.9		43.8		17.8		14.7			1930	20.2		51.2		39.4		8.2		1.3	
6	33.3	34.3	72.5	69.2	45.5	41.6	15.8	18.8	18.8	16.4		1	19.6	15.7	53.8	56.4	30.4	38.8	5.8	6.9	1.2	1.2
7	42.7		70.6		41.1		19.5		16.7			2	7.5		68.4		43.3		4.9		1.0	
8	34.6		67.0		34.3		23.3		16.1			3	9.0		61.0		37.9		5.0		.9	
9	34.1		66.6		43.7		24.0		15.7			4	5.7		52.3		38.1		4.1		.8	
1900	43.1		67.2		40.8		21.5		16.4			5	3.4		58.9		36.7		2.7		.4	
1	37.8	34.5	73.1	67.3	37.4	39.8	22.6	20.9	16.3	15.5		6	4.6	7.6 <sup>1</sup>	45.9	43.6 <sup>1</sup>	39.3	36.7 <sup>1</sup>	1.9	2.7 <sup>1</sup>	.4	.5 <sup>1</sup>
2	35.4		66.6		42.2		19.3		13.5			7	16.5		31.5		32.6		2.2		.4	
3	22.0		63.0		35.1		17.3		15.7			14 year average.										

Europe, partly because of sharply increased consumption in the United States. But the decline was very slight even during the world depression, except in 1931, and exports still contribute nearly 40 per cent to total income from tobacco. The preferential tariff rate applied to imports from the British Empire has reduced English imports of American tobacco from 90 per cent of English tobacco consumption to about 75 per cent. Import restrictions by Germany and Italy and a decline in European consumption during the industrial depression are the other main reasons for the decline in foreign demand. Furthermore, American per capita consumption of cigarettes has more than doubled since the early '20's, interrupted by a slight decrease between 1930 and 1932.<sup>19</sup> As a whole, the income contributed by tobacco exports has not changed much since the early '90's. The post-War trend seems to be slightly downward.<sup>20</sup>

## Wheat

The contribution of exports to total income from wheat (Chart 8 and Table 6) gained sharply in the '70's, rising from 23.8 (average 1869-73) to 37.8 per cent (average 1879-83), with a peak of 46.4 per cent in 1879 (as against a trough of 8.9 per cent in 1866). As already said, the record level at the end of the '70's was due largely to the exceptional foreign demand resulting from crop failures in Europe, and was not maintained. Until the close of the century the export share fluctuated somewhat above 33 per cent. European requirements rose steeply with the swift pace of industrialization, the high rate of population growth, and a rising standard of living which caused a shift from rye to wheat consumption. A second peak in the relative importance of wheat exports was reached in 1900 with 43 per cent. Whether the abrupt turn was due mainly to a change in the domestic agricultural and industrial situation or in the competitive position of foreign farming systems and the slackening in the rate of growth of European demand is not certain. In any event, income from exports fell from 34.5 (average 1899-1903) to 20.5 per cent in 1904-08, and to 18.0 per cent in 1909-13.

<sup>19</sup> *Agricultural Outlook Charts*, Tobacco, 1939, p. 3. Consumption of tobacco used in cigarette manufacture increased from 146.9 million pounds in 1920 to 347.9 million pounds in 1930 and to 480.0 million pounds in 1937. During the same period consumption of tobacco used for cigars decreased only 40 million pounds and tobacco used for chewing, smoking, and snuff 60 million pounds.

<sup>20</sup> In this description changes in the types of tobacco exported, particularly since the World War, are not considered. Prior to the War, exports of dark types were roughly 60 per cent of total tobacco exports. During the five years ending with 1937, flue-cured tobacco accounted for more than 75 per cent of exports (cf. B. S. White, Jr., *Our Changing Tobacco Exports*, *The Agricultural Situation*, March 1939).

In the United States the virtual disappearance of free land modified the extensive production practices that had been common after the Civil War. This was probably one reason for the more rapid rate of industrialization and urbanization and thus of the rise in domestic consumption.<sup>21</sup> American agriculture was well on its way to diversifying production by growing more protective foodstuffs for domestic use, thus avoiding competition in foreign markets at unremunerative prices. Alternative opportunities in industry were becoming more attractive than farming and were weighed more carefully by those choosing an occupation or having capital to invest.<sup>22</sup> About this time, large areas suitable for wheat production began to be settled in Canada, Argentina, and Australia, which enjoyed advantages similar to those that had existed in the United States during the last quarter of the 19th century. European countries bought their wheat more and more from these new areas. Germany and France, furthermore, attempted to reverse their wheat policy and to foster domestic production.

The World War interrupted this gradually developing new balance. One may argue that the introduction of the gasoline tractor and combine might in any event have brought about a rapid increase in wheat production in the United States and that a larger share of income would have been derived from exports even without the abnormal requirements and policies initiated by the outbreak of the World War. War conditions undoubtedly hastened mechanization and pushed the expansion of staple foodstuffs production to an extent peace-time conditions would not have warranted or induced. Since war conditions did not affect the contribution of wheat to total income from the domestic market (Chart 4), the entire increase in the importance of wheat to the farm economy as a whole during the War was due to the increase in exports. The share nearly doubled, from 18.0 per cent in 1909-13 to 34.4 per cent in 1914-18, and maintained practically this level in 1919-23. European production had not yet been fully restored, and the export possibilities from such more distant sources as Argentina and Australia were curtailed by high costs of transportation. While most European countries attempted to increase their domestic production, a new tide of expansion resulting from mechanization occurred in all surplus-producing countries. Prior to the world depression, American exports had been large chiefly because of lending to European countries. But even between 1924 and 1928

<sup>21</sup> Domestic consumption of wheat increased at an average annual rate of 2.3 per cent during 1896-1914 as against 1.5 per cent during 1878-96.

<sup>22</sup> This point has been emphasized by E. G. Nourse; cf., *American Agriculture and the European Market* (McGraw-Hill, 1924), p. 41.

it became evident that exports could not absorb the surplus resulting from large crops and decreased domestic consumption. After the beginning of the world depression, European countries changed their wheat policies drastically, relying more on their own production. To the difficulties created by decreasing exports were added those arising from the disorganization of the international balance of payments. Since 1932 gross income from wheat exports has been below the pre-War level.

#### Meat Animals

The determination of the effects of the changes in the role of foreign markets on American livestock producers involves some statistical difficulties. In view of the wide amplitude of export changes and of their effects on the American farm economy as a whole, we attempted to compute separately the value at farm prices of the exports of pork and pork products and of live cattle and beef products.<sup>23</sup> It is believed that the estimates are usable approximations. The changes in the importance of these exports are very similar to those in wheat, and essentially were caused by the same factors.

#### Pork and Pork Products

The rapid expansion of agriculture in the upper Mississippi Valley after the Civil War led to a sharp rise in corn and hog production with an ensuing price fall. This, together with lower transportation costs and the introduction of refrigeration, encouraged exports. From about 2 per cent in 1869 exports jumped to 22 per cent in 1880; in five-year averages the increase was from 6.6 (average 1869-73) to 17.9 per cent (average 1879-83) (Chart 8 and Table 6). Governmental regulations introduced by Italy, Germany, and France between 1879 and 1881, restricting the import of pork and pork products, led to immediate curtailment of foreign markets. By 1888 the share of exports had been nearly halved (12 per cent), even though American hog producers did not further increase production in the '80's, partly on account of the discouraging export situation.<sup>24</sup> The import restrictions of most European countries were gradually eased and by the early '90's exports had nearly regained the position they had held prior to these restrictions. Until the beginning of the century they contributed increasingly to the total income of hog producers, becoming nearly a quarter. When European importers then returned to their policy of restriction, European production, particularly in Germany and Denmark, was greatly augmented. American income from exports of all pork products fell continuously from 24 per cent in 1899 to 11.2 per cent in 1914, or from an average of 20.9 per cent (1899-1903) to 13.3 per cent (1909-13). The decline was especially sharp

in pork and bacon exports. But European producers could not meet European demand for lard to the degree they could in the case of pork and bacon, for European hogs have a low lard yield. In consequence, the value of lard exports, which were 37 per cent of income from exports of pork and pork products, 1894-98, rose to 52 per cent by 1909-13.

The outbreak of the World War reversed this declining trend in the contribution from exports of pork and pork products, as of wheat and all other staple farm foodstuffs. During and shortly after the War, foreign production was greatly reduced. In addition, demand for the Allied armies was heavy. Within a few years exports again reached the high level of the late '90's; in 1919 an all-time peak was attained, when exports contributed almost one-third of total income from hog slaughter. During the War another change is significant: foreign demand, which from the beginning of the century to the War had gradually shifted toward lard, affected particularly pork and bacon. As a result, only one-third of the value of pork and pork products exported in 1914-18 came from lard as against 52 per cent in 1909-13. A turning point in this brief rise in exports occurred in 1919. European production was then resumed and fostered to such a degree that from the 1919-23 record average of 21.1 per cent, income from exports of pork and pork products decreased continuously to 12.4 per cent in 1924-28, 6.9 per cent in 1929-33, and 2.7 per cent in 1934-37. At the same time, the composition of exports resumed its pre-War tendency and in the five years 1929-33 the value of lard exports was two-thirds of the income from exports of pork and pork products.

<sup>23</sup> Exports of livestock products are composed of many commodities. Hog products, for instance, are exported in the form of fresh and frozen pork, hams and shoulders, bacon, pickled and salted pork, canned pork, sausages, and lard. The export price differentials among these various products vary greatly, particularly the pork-lard. We converted all products except lard into live weight meat units according to the amount of fresh meat required. (This information was secured through Charles Burmeister of the Bureau of Agricultural Economics.) Exports of lard, which during various periods were larger than those of all other hog products combined, could not be evaluated by the same method. Instead, we computed the export value of all hog products except lard and assumed that the price differential between export and farm prices of hog products other than lard prevails also for lard. Therefore, we raised the farm value of non-lard exports by applying the percentage the export value of lard is of that of non-lard products. A similar method was used in the computation of the farm value of live cattle and beef product exports. Exported cattle were assumed to have a live weight of 1,200 pounds. Tallow and oleo oil, which account for a large percentage of total beef product exports, were evaluated in the same manner as lard exports. All livestock exports were computed for calendar years to make possible comparison with livestock income, which is by calendar years.

<sup>24</sup> Cf. Hog Production and Marketing, *Yearbook of Agriculture*, 1922, p. 191.

#### Live Cattle and Beef

Until the turn of the century, exports of live cattle and beef depended upon the same circumstances that determined exports of pork and pork products. The great cattle ranges of the Far West and, after the middle '80's, of the ranches in the Southwest, developed partly with the help of English and Scottish capital, provided huge surpluses for export. By the early '70's the efficiency of marketing was greatly enhanced by refrigeration and special transportation facilities. Exports more than trebled between 1869-73 (3.5 per cent) and 1879-83 (11.6 per cent) (Chart 8 and Table 6). European import restrictions hampered exports until 1887, but when they were relaxed, exports continued to rise until the close of the century. In 1903 Germany, the second largest importer, prohibited the importation of live cattle and beef from the United States; other European countries

imposed special regulations and duties. Immediately before the War, British imports from outside her dominions came predominantly from South American countries.<sup>25</sup> As in the case of wheat the importance of exports decreased sharply; the domestic market tended to become a sufficient outlet for the only slightly increasing production. From 16.4 per cent in 1894-98 (peak, 18.8 per cent in 1896) income from cattle and beef exports decreased swiftly to 4.9 per cent in 1909-13, approaching the percentage for the early '70's. The pre-War low was reached in 1913 with 2.9 per cent. The United States had practically ceased to be an ex-

<sup>25</sup> American packers met the decline in beef exports by engaging heavily in the South American beef trade. By 1913 through their South American plants they had control of 60 per cent of the beef output of Argentina and Uruguay and 75 per cent of that of Brazil, according to R. A. Clemen, *The American Livestock and Meat Industry* (Ronald Press, 1923), p. 296.

Chart 9

CONTRIBUTION OF EXPORTS OF SELECTED FARM PRODUCTS TO TOTAL AGRICULTURAL EXPORTS  
FIVE YEAR AVERAGES, FISCAL YEARS 1879-1937

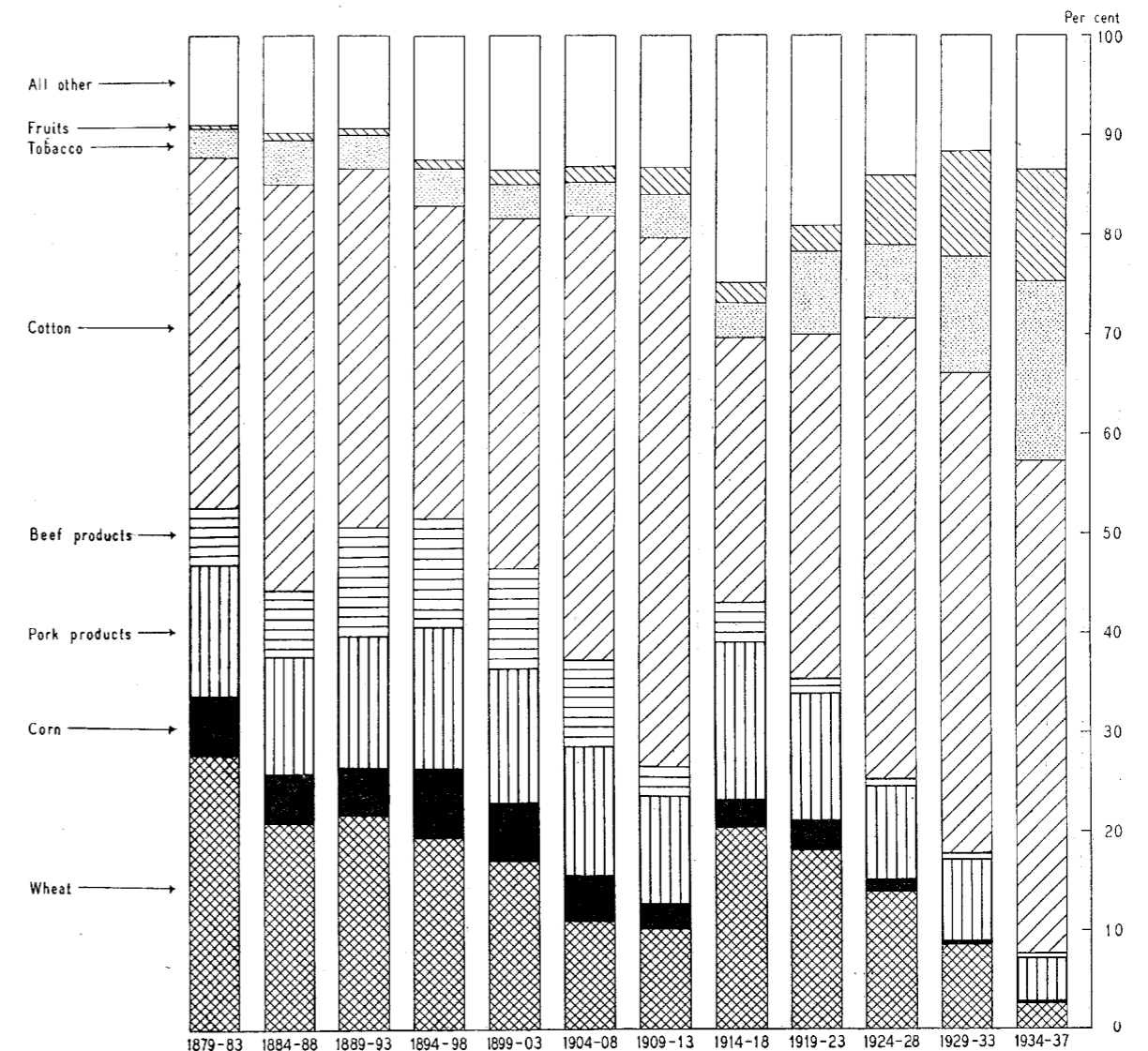


Chart 10

CONTRIBUTION OF EXPORTS OF SELECTED FARM PRODUCTS TO TOTAL AGRICULTURAL EXPORTS  
FISCAL YEARS 1878-1937

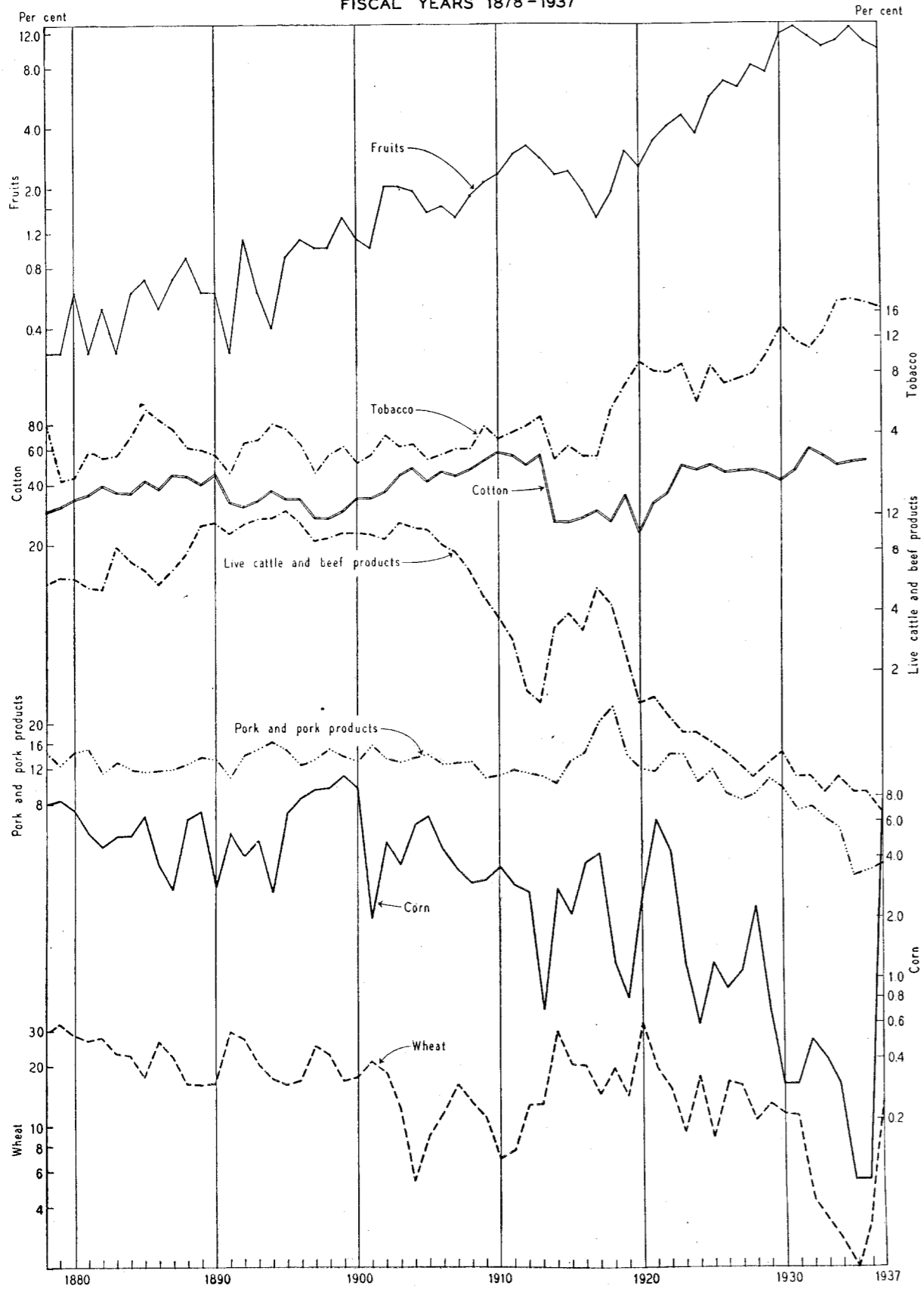


TABLE 7. Percentage Contribution of Exports of Selected Farm Products to Total Agricultural Exports, Fiscal Years, 1878-1937 (measured in export values)

	WHEAT	CORN	PORK AND PORK PRODUCTS	CATTLE AND BEEF PRODUCTS	COTTON	TOBACCO	FRUITS	ALL OTHER								
	5 YR. avg.	5 YR. avg.	5 YR. avg.	5 YR. avg.	5 YR. avg.	5 YR. avg.	5 YR. avg.	5 YR. avg.								
1878	28.8	7.5	14.3	5.6	29.2	4.5	.3	9.8								
9	32.5	7.8	12.3	6.0	31.0	2.4	.3	7.7								
1880	28.8	7.0	14.3	5.9	33.7	2.5	.6	7.2								
1	26.8	5.3	6.0	14.9	13.1	5.3	6.2	35.4	35.1	3.4	2.9	.3	.4	8.6	8.5	
2	27.9	4.6		11.4		5.2		39.4		3.1		.5		7.9		
3	23.0	5.2		12.8		8.4		36.2		3.2		.3		10.9		
4	22.6	5.2		11.8		7.2		36.0		4.0		.6		12.6		
5	17.7	6.5		11.5		6.5		41.5		5.4		.7		10.2		
6	26.6	21.0	3.7	4.9	11.6	11.8	5.5	6.7	37.9	40.7	4.8	4.4	.5	.7	9.4	9.8
7	22.0	2.8		11.8		6.6		44.4		4.3		.7		7.4		
8	16.2	6.3		12.5		7.8		43.8		3.5		.9		9.0		
9	16.1	6.9		13.5		10.7		39.5		3.4		.6		9.3		
1890	16.3	2.9		13.1		11.2		44.8		3.2		.6		7.9		
1	29.5	5.3	4.8	10.7	13.2	9.8	10.9	32.2	36.0	2.6	3.3	.3	.6	9.6	9.4	
2	27.2	4.1		13.7		11.0		30.6		3.7		1.1		8.6		
3	20.2	4.9		14.8		11.6		32.7		3.8		.6		11.4		
4	17.1	2.7		16.1		11.7		36.5		4.6		.4		10.9		
5	16.0	6.7		14.7		12.8		33.4		4.3		.9		11.2		
6	16.8	19.5	8.0	7.0	12.2	14.2	11.1	10.8	33.3	31.4	3.6	3.7	1.1	.9	13.9	12.5
7	25.0	8.8		13.1		9.0		26.9		2.6		1.0		13.6		
8	22.4	8.9		14.7		9.3		26.8		3.2		1.0		13.7		
9	16.7	10.3		13.5		9.9		29.0		3.5		1.4		15.7		
1900	17.5	8.9		12.8		9.9		33.4		2.9		1.1		13.5		
1	20.9	17.1	2.0	5.9	15.3	13.5	9.7	10.0	33.5	35.1	3.2	3.4	1.0	1.5	14.4	13.5
2	18.4	4.8		13.2		9.2		36.0		4.0		2.0		12.4		
3	12.2	3.7		12.7		11.1		43.4		3.5		2.0		11.4		
4	5.3	5.9		13.3		10.5		47.5		3.6		1.9		12.0		
5	9.0	6.5		13.8		10.2		40.3		3.0		1.5		15.7		
6	11.6	11.0	4.4	4.7	12.4	12.9	8.6	8.7	45.2	44.6	3.2	3.3	1.6	1.6	13.0	13.2
7	16.1	3.5		12.5		7.9		43.1		3.4		1.4		12.1		
8	13.2	3.0		12.7		6.3		46.7		3.4		1.8		12.9		
9	11.0	3.1		10.5		4.7		51.5		4.4		2.1		12.7		
1910	6.9	3.6		10.8		3.7		56.5		3.8		2.3		12.4		
1	7.6	10.2	2.6	11.5	10.9	2.9	2.9	54.0	53.1	4.1	4.3	2.9	2.7	14.1	13.3	
2	12.7	2.7		11.0		1.6		48.8		4.4		3.2		15.6		
3	12.8	.7		10.7		1.4		54.8		4.9		2.8		11.9		
4	29.1	2.8		9.8		3.3		25.5		3.0		2.3		24.2		
5	20.0	2.1		12.7		3.9		25.3		3.5		2.4		30.1		
6	19.9	20.5	3.8	2.8	13.9	15.9	3.2	4.0	26.5	26.4	3.1	3.6	1.9	2.0	27.7	24.8
7	14.3	4.2		19.7		5.2		28.7		3.1		1.4		23.4		
8	19.3	1.2		23.6		4.3		25.8		5.3		1.9		18.6		
9	14.2	.8		13.6		2.3		34.5		7.1		3.0		24.5		
1920	32.4	2.6		11.6		1.4		22.7		9.1		2.5		17.7		
1	19.7	18.2	6.2	3.0	11.3	12.8	1.5	1.5	31.3	34.5	8.2	8.3	3.4	2.6	18.4	19.1
2	15.4	4.3		13.8		1.2		35.5		8.1		4.0		17.7		
3	9.4	1.2		13.7		1.0		48.6		9.0		4.5		12.6		
4	17.7	.6		10.0		1.0		46.0		5.8		3.7		15.2		
5	8.8	1.2		11.5		.9		48.8		8.8		5.6		14.4		
6	16.7	14.0	.9	1.2	8.8	9.4	.8	.8	44.9	46.2	7.1	7.4	6.7	6.9	14.1	14.1
7	15.9	1.1		8.2		.7		45.2		7.5		6.2		15.2		
8	10.7	2.3		8.7		.6		45.9		8.0		8.0		15.8		
9	12.8	.7		10.4		.7		44.0		9.9		7.4		14.1		
1930	11.4	.3		9.3		.8		40.6		13.7		11.6		12.3		
1	11.2	8.6	.3	4	7.2	8.2	.6	.6	45.2	48.3	11.5	11.7	12.5	10.5	11.5	11.7
2	4.3	.5		7.5		.6		58.1		10.6		11.2		7.2		
3	3.4	.4		6.5		.5		53.5		12.7		9.9		13.1		
4	2.8	.3		5.9		.6		48.7		18.0		10.6		13.1		
5	2.0	.1		3.4		.5		50.1		18.4		12.4		13.1		
6	3.3	5.2 <sup>1</sup>	.1	2.0 <sup>1</sup>	3.6	4.2 <sup>1</sup>	.5	.5 <sup>1</sup>	50.9	46.0 <sup>1</sup>	17.7	17.7 <sup>1</sup>	10.5	10.8 <sup>1</sup>	13.4	13.6 <sup>1</sup>
7	12.8	7.7		3.9		.4		34.4		16.8		9.7		14.3		

<sup>1</sup> 4 year average.