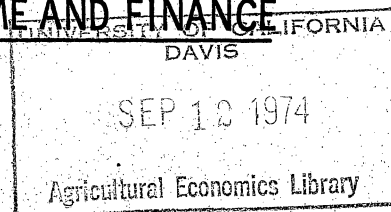# IMPACT OF MONETARY ACTIONS ON FARM INCOME AND FINANCE

Speech by
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For more than a decade the United States has experienced
accelerating inflation. Since late 1971 average prices have risen
at a rate of 5 percent per year, measured by the Gross National
Product (GNP) deflator, and the wholesale price index of all
commodities has risen an average of 14 percent per year.

The general inflation has prompted a number of studies
concerning its impact on agriculture. Most of the studies were
limited to comments on the effects of inflation, rather than monetary
actions on agriculture. Nevertheless, if one believes, as I do,
that excessive monetary growth is the major cause of inflation,
the influence of monetary actions is implied.

The impact on agriculture attributed to inflation varied
widely in these studies, ranging from real wealth gains to nominal
and real wealth losses. One writer went so far as to conclude that
inflation depressed those incomes realized from the production of
feed grains, wheat, and cotton compared with income from meat

animals, poultry, fruits, and vegetables (4). Another found a close and consistent relationship between changes in the stock of money and changes in agricultural income and investment, and concluded that agriculture is far more closely related to, and integrated with, the total economy than is currently recognized (10).

The inconsistency of the findings is a reminder of the questioning disposition of the famous French philosopher, Michael de Montaigne (1533-92), who, after years of concentration prior to writing his essays, decided that absolute facts were nonexistent. Rather than accept this pessimistic view, I suggest that most of the inconsistency reflects the difficulty in determining cause and effect relationships in agriculture and differences in the time horizon of the researchers.

In agriculture, cause and effect relationships are clouded by a number of nonmonetary destabilizing elements which can have a sizable effect between the planning of production and the realization of output. Output and demand fluctuations occur as a result of unanticipated factors such as unusual weather and other natural disturbances, livestock cycles, and changes in foreign demand. The year-to-year variation caused by these factors often overshadows the influence of monetary actions.

Part of the inconsistency reflects the short time span in which most of the researchers were concentrating. Jacob Viner, prior to the predominance of the "New Economics," noted that

economists tended to concentrate exclusively on long-run analysis (23).
Today, however, few are preoccupied with the effects that a given
action will have in the more distant future. Most economists have
moved to the other polar position, and accepted on faith Keynes'
dictum that in the long run we are all dead. Hence, public actions
tend to be viewed on the basis of their immediate impact rather than
their longer-run consequences.[1]

I adhere exclusively to neither view, but suggest that we
are continuously experiencing both the short-run and long-run
effect of past actions - the short-run impact of recent actions as
well as the impact of actions taken in the more distant past. Hence,
an unambiguous discussion of the influence of monetary actions
on agriculture requires a distinction between the two time periods.
In my view, failure to make this distinction is a cause of the confusion.

Money and Business Cycles

This article assumes that the trend rate of monetary growth
is largely responsible for average price movements in the economy
and that variations from the trend have a major influence on the
cyclical movements of total output.

This view is based on the interaction of the demand for and
supply of money. It holds that demand for money arises as a result of
the services that money provides; that is, money facilitates transactions

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[1] For example, see the Record of Policy Actions of the Federal Open
Market Committee in 1972. Major Committee objectives, such as the
ease or tightness of bank reserves, current money market conditions,
or current international developments were consistently of a short-run
nature (2).

and serves as a store of purchasing power. The quantity of money that people desire to hold depends on income, wealth, interest rates, prices, and price expectations. On the other hand, the supply of money is largely under the control of the Federal Reserve System. The System through its open market operations can control the trend growth of the money stock.

If the quantity of money held by the public is greater than desired, the rate of spending will increase until income, wealth, prices, interest rates, and other factors which determine money demand adjust to the larger stock of money. During this period of adjustment total demand for all types of assets, including goods and services, will rise. Production and employment will be stimulated as inventories decline to less than desired levels. Over the longer run, as the economy approaches its productive capacity, excessive monetary growth will result only in price increases, wealth transfers, and inefficiencies caused by the implicit tax on money.

Considerable evidence has been gathered to support this monetary view. Research conducted at the Federal Reserve Bank of St. Louis, as well as elsewhere, has demonstrated that marked and sustained changes in the rate of monetary growth have generally preceded turning points in the business cycle (6, 7, 9, 24). Sophisticated statistical analysis confirms the relationship between changes in the stock of money, total spending, and prices (1, 8, 13, 16). It is not my purpose to rehash the evidence that money, business cycles, and inflation are related. I accept the evidence as presented that changes in the quantity of money are the dominant causal factors.

Impact of Business Cycles on Agriculture

Accepting the view that changes in the rate of monetary growth are the major cause of business cycles, the impact of such cycles on agriculture can, in turn, be either directly or indirectly attributed to monetary actions. The following hypotheses are advanced and will be tested as an aid to orderly discussion of such influences:

1. In the longer run, say five years or longer, monetary actions have about the same impact on farming as on the nonfarm sector. The trend growth in money is a dominant determinant of nominal farm income, farm expenses, and average farm product prices. All prices, however, eventually return to about their same relative positions, and with the exception of wealth transfers, monetary actions have little effect on real farm income or the well-being of farm people.

2. In the short run the farm and nonfarm sectors differ significantly in their adjustments to monetary actions.

   a. Farm output responds less and farm prices more than output and prices in the nonfarm sector.

   b. Farm output adjusts largely through changes in

short-lived production inputs such as
fertilizer, chemicals, etc.

   c.   Farm employment is more stable than nonfarm
employment but sharper adjustments occur
in farm wage rates.

   d.   Farm income responds to monetary actions about
the same as gross national product.

3.   Interest rates charged farmers are less sensitive
to monetary actions than rates charged some other
major sectors of the economy.

Prior to the establishment of floating exchange rates,
domestic monetary actions also had an impact on the foreign
demand for U.S. farm products. With the fixed exchange rates
in effect until mid-1971, domestic monetary actions which led to
a high rate of inflation in the United States tended to reduce
foreign purchases of U.S. farm products and increase U.S.
buying of foreign farm products. With the adoption of floating
exchange rates, however, foreign demand for U.S. farm products
is not greatly affected by domestic monetary actions and inflation.
A rise in domestic prices is now offset by a decline in the
exchange value of the dollar.

Longer-Run Impacts

Agriculture and the nonfarm sector of the economy probably
make about the same fundamental adjustments in response to

monetary actions in the long run.$\underline{2/}$ If resources are fully
utilized and production techniques are unchanged, the rising
demand for goods and services caused by an increase in the
stock of money will not lead to increases in output or major
changes in relative prices. To meet this rising demand caused
by monetary actions, producers will bid for scarce resources --
land, labor, and capital, and resources will be channeled via
prices, wages, rents, and interest rates to those uses where
returns are highest. But with the same quantity of resources
required to produce each product, prices of each resource will
be bid up about the same percent. Producers will be willing to
produce about the same quantity of goods and services, and pay
approximately the same real wages, rents, and interest. Hence,
relative prices and real supply will not change much.

Consumer tastes and preferences, the other determinants
of the production mix, are likewise not affected by rising total demand.
Consumers have more dollars to spend, but the larger stock of money
will purchase no more utility or well-being than the smaller
stock of money would purchase earlier. Consequently, if the mix
of the earlier purchases maximized well-being, the same quantity
of each good and service should maximize well-being after inflation,
assuming no major change in wealth distributions. Hence, no major

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2/ During a correctly anticipated inflation the implicit tax on money
bears heavier on economic activities that are relatively labor intensive.
Consequently, the real demand for labor falls and real wages decline,
while demand for capital rises and capital formation increases (12).

gains or losses will accrue to agriculture or to any other sector
of the economy, except for the possible impact of wealth transfers.

Unanticipated inflation caused by monetary growth results
in transfers of wealth from monetary creditors to monetary debtors.

Most farmers are probably net monetary debtors and thereby receive
"windfall" gains from inflation. The farm finance data, however,
exclude farmers' holdings of such assets as life insurance, savings
and loan shares, corporate debt, and mortgages (17). Furthermore,
a balance sheet for retired farm people might show a net monetary
creditor position. Consequently, there is no assurance that farm
people gain during their life span from changed debtor-creditor
relationships caused by inflation. Younger farmers are net
monetary debtors and hence, net gainers, while retired farmers
may be net monetary creditors, thus net losers.

Short-Run Output Adjustments

Movements of key variables during the National Bureau
of Economic Research (NBER) business cycles indicate that farmers
have responded to monetary actions in the hypothesized manner.
Total farm output, after adjustment for trend, declined from peak
to trough in nine of the ten economic recessions and rose from trough
to peak in seven of nine recoveries since 1920 (Table 1). Farm output
declined in each of the major recessions (those during which the
industrial production index declined more than 10 percent per year -
1920-21, 1929-33, and 1937-38) and rose in each recovery following

these recessions.

The cyclical movements in farm inputs were generally in the same direction as farm output, indicating that the output response was planned and not a random occurrence. Total inputs, after adjustment for trend, declined in eight of the ten recessions and rose during seven of the nine recoveries. The decline averaged 1.3 percent per year during the recessions, and the rise averaged 0.6 percent per year during the recoveries. Total inputs declined 2.0 percent or more per year in each of the three major recessions and rose 0.6 percent or more per year in each recovery which followed.

Inputs of fertilizer and liming materials are a more sensitive indicator of the farmer's response to changes in demand than total farm inputs. Farmers, like other businessmen, attempt to maximize wealth over time by adding resources until the marginal cost of all inputs are equal to their marginal value product. However, significant adjustments for a number of relatively fixed farm inputs, such as land, labor, and machinery, cannot be made over the course of most business cycles without major losses. On the other hand, fertilizer adjustments can be readily made in response to changing demand and supply conditions, since it is added annually and has little residual value.

Total fertilizer and lime usage, after adjusting for trend, was down in eight of the ten recessions and up in seven of the nine

recoveries. The decline averaged 8.7 percent per year for the 13 years of business decline and the increase averaged 3.8 percent per year during the 30 years of business recovery. Declines of 7 percent or more per year occurred in each of the three major business downturns, and increases of 5 percent or more per year occurred in each of the recoveries which followed.

Farm output adjustments over the course of the business cycles were found to be smaller on average than adjustments in the nonfarm sector.[3/] Farm output decreased an average of 2.3 percent per year in the thirteen years of business decline. In contrast real GNP decline averaged 6.6 percent per year and industrial production 12.7 percent per year (Table 2). In the years of increasing business activity, farm output increased an average of 0.9 percent per year compared with increases of 2.7 percent and 6.4 percent for real GNP and industrial production, respectively.

Special Factors Caused Greater Stability of Farm Output

The slower rate of farm output adjustment to changes in business conditions may be traced to a number of special factors including the method of committing farm resources and the structure of farming. Agriculture is by nature largely seasonal, and production plans must conform to seasonal weather. Cropping plans and resource commitments must be made in time to permit planting, cultivating and harvesting; and once made, such commitments cannot be readily

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[3/] Professor Theodore W. Schultz also found that farm output is relatively more stable than nonfarm output, but that farmers do make sizable adjustments in response to changes in demand (15).

changed without sizable losses. Livestock production plans are made for even longer periods than crops.

Typical farms, in contrast to large nonfarm firms, have the entrepreneural function, labor, and capital all vested in one person. Most farms are not able to make major labor adjustments without going out of business since the owner's labor often constitutes most of the labor input. Cash outlays are relatively low and a high percentage of the total costs are fixed. Consequently, farmers must take a long view, and are apparently willing to produce for considerable periods of time at below average rates of return on labor and capital than in other lines of production. Farm workers have chosen to accept lower wages in the short run rather than search for other jobs or accept unemployment. In contrast, the larger nonfarm firms, which have ownership and labor vested in different people, find it easier to adjust to declining demand in the short run by laying off workers rather than by reducing wages and prices. In many cases such firms are bound by wage contracts which prevent wage reductions, and output must be reduced through layoffs.

The impact of the special factors on farm output may have declined in recent years. As pointed out by D. Gale Johnson, in recent years farms have become more like nonfarm firms (11). Purchased inputs in farming have increased, rising from an average of 49 percent of gross farm income in 1910-14 to 71 percent in 1972.

Furthermore, expenditures on variable costs items such as seed, feed, fertilizer, and other chemicals, have risen sharply relative to total costs. These outlays rose from 32 percent of average farm income in 1910-14 to 49 percent in 1972. An increase in such inputs, which are adjusted more quickly to reflect their changing marginal value product than inputs with greater fixity, tends to make farm output more responsive to monetary actions than heretofore.

The methods used in this study, however, did not pick up a faster rate of farm output response to changed business conditions in recent years. For example, total farm output has moved countercyclically three times since 1920, two of which have occurred since World War II (Table I). Fertilizer and liming inputs have moved countercyclically four times, three of which have occurred since World War II.

The failure of agriculture to respond as consistently to business conditions in recent years as in the pre-war period may reflect the mildness of the recent business cycles, and government farm programs. As indicated in Table 2 the post World War II cycles have been relatively mild--the sharpest annual rate of decline in industrial production being 10 percent compared with rates of decline of 27, 15, and 25 percent in the downswings of 1920-21, 1929-33, and 1937-38, respectively. Upswings in industrial production have likewise been more moderate in the post-war period, the steepest rise being 5 percent per year in 1949-53. In contrast,

increases of 19, 9, and 17.5 percent per year occurred in the pre-war upswings of 1921-23, 1933-37, and 1938-41, respectively. The annual rate of change in real GNP has not exceeded 5 percent per year since 1948 whereas higher rates of change occurred during each of the major pre-war downswings and the upswings which followed.

Since 1948, government farm programs have been more effective in isolating agriculture from general business conditions than in pre-war years. Such programs, prior to 1933, had little impact on either farm output or prices, and through 1941 government price support levels were relatively moderate. The quantity of farm products purchased through price support operations was relatively small and the Commodity Credit Corporation (CCC) loan rate was generally below the market price for most major commodities. Since the mid-1950's, however, the CCC loan rate has frequently been above the market price and the government has been the residual purchaser of products which failed to clear the market at the support price level. In some years crops held by the CCC as a result of such operations have totaled 40 percent of the value of all crops sold, and holdings of individual crops have exceeded their annual production. In addition, major domestic food consumption and export subsidy programs have been factors in reducing the effect of monetary actions on agriculture since World War II.

Farm Price Adjustments

Agricultural prices have greater procyclical movements than prices in the nonfarm sector, but farm price movements were less consistent as a result of the instability caused by nonmonetary factors. Farm prices fell at an average rate of 11.4 percent per year during the downswings since 1920, compared with rates of 6.1 and 3.8 percent, respectively, for wholesale and consumer prices. During the upswings farm prices increased at an average rate of 3.2 percent per year, compared with rates of 1.5 and 0.4 percent, respectively, for wholesale and consumer prices. Farm prices declined more than 17 percent per year in each of the major business recessions and rose more than 6 percent per year in each recovery which followed. Crop and livestock prices moved at about the same average rate on both the upside and the downside of the cycles. Prices received by farmers, after adjusting for trend, declined during seven of the ten recessions and rose during six of the nine recoveries (Table 3). In comparison, wholesale industrial commodity prices declined in nine of the recessions and rose in six of the recoveries, and consumer prices declined in eight of the recessions and rose in six of the recoveries.

Employment and Wages

As indicated earlier, monetary actions have had relatively little impact on farm employment since 1920. Hours worked on farms

declined during most of the business downswings, but the decline averaged only 0.5 percent per year and the number of hours worked actually increased during the major 1929-33 depression (Table 4). In contrast to the stability of farm employment, average farm wage rates declined almost 10 percent per year during the 13 years of declining business since 1920 and rose 2 percent per year during the 30 years of business recovery. Such wages dropped 38 percent during the 1920-21 recession and an average of 20 percent per year during the 1929-33 depression.

In contrast to relatively stable employment and unstable money wages on farms, employment was unstable and money wages relatively stable in the manufacturing sector during the course of the business cycles. Manufacturing employment declined at an average of 9.4 percent per year during the years of declining business and declined 10 percent or more per year during each of the major recessions. Manufacturing wage rates, however, declined at an average rate of only 4.4 percent per year during all the recessions. During the business upswings, manufacturing employment rose more sharply and wage rates more moderately than in farming.

Income

Both gross and realized net farm income have followed procyclical courses somewhat similar to that of nominal GNP since 1920. During the 1920-21 and the 1937-38 business downswings

both gross and net farm income dropped more sharply than GNP, but in the more prolonged 1929-33 depression these measures of farm income and GNP declined at about the same rate (Table 5).[4/] On the upside of the cycles both measures of farm income showed more moderate gains than GNP, reflecting, in part, the post-World War II adjustments to more normal domestic and export food demands. Export demand for U.S. farm products slackened somewhat during the period of domestic business expansion in the late 1940s and early 1950s as the war-torn economies in Western Europe and Asia regained their prewar production levels.

Monetary Actions and Farm Finance

Expansive monetary actions tend to reduce interest rates temporarily, but cause an increase in rates over the longer run. Consequently, any effort on the part of the monetary authorities to reduce interest rates today by increasing the growth of money will result in higher rates a few months ahead. The increased stock of money will have an impact on prices and the expected rate of inflation, which after a few months will result in higher interest rates.

Nominal interest rates will eventually approach the rate of inflation plus the real rate of return on savings (25). Both

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[4/] These results are generally consistent with the findings of William Gramm and Robert Nash (10).

supply and demand factors tend to increase interest rates during
periods of rising prices. Demand for credit will rise as borrowers
observe opportunities for investing funds in assets that they expect
to appreciate in value. The amount of loan funds supplied will,
in turn, tend to decline as savers find opportunities for more pro-
fitable investments directly. The rising demand for, and declining
supply of, loan funds during rising price expectations will thus
reach an equilibrium position when the rates rise to levels
equal to the expected rate of inflation plus a normal real rate
of return. Farm financing costs will reflect monetary actions
over the longer run in the same manner as nonfarm financing
costs. Farmers must eventually pay a real rate of interest plus an
additional increment equal to the expected rate of inflation.

In the short run, however, interest rates charged
farmers neither rise nor fall as rapidly as rates charged other
borrowers. Interest rates on most farm loans were about the
same or higher than rates on business loans in early 1972.
But following the uptrend in rates in early 1974, rates on business
loans were generally higher than rates charged farmers.

This tendency of rates charged farmers to lag other rates
may be caused partly by the lower lending margins charged by
the Farm Credit Banks during periods of rising interest rates

than during periods of declining rates. The smaller commercial banks which are the major farm lenders are also reluctant to change rates, although this reluctance may be weakening, in view of the expanded participation of smaller banks in the Federal funds market.

Summary

In summation, the long-run impact of monetary actions on agriculture is about the same as on other sectors of the economy. Trend movements of output and real income are largely determined in both sectors by non-monetary factors such as natural resources, the labor force, capital, technology and consumer preferences. The dominant influence of monetary growth in the long run in both sectors is on average prices.

In an unanticipated inflation, wealth is transferred from creditors to debtors. Hence, the wealth of those farmers who are net borrowers is increased and that of net lenders is reduced. But farm people, including retired farmers, during their life span may be neither major net gainers nor net losers as a result of such transfers.

In the short run pronounced variations of monetary growth around a trend rate is the dominant cause of business cycles, and the magnitude of the adjustments in the farm and nonfarm sectors during business cycles is substantially different.

Farm output tends to adjust at a slower rate than output in the nonfarm sector, but the average movement of farm output was generally below the trend rate during the downswings in business cycles and above the trend rate during the upswings. Farm inputs also followed a similar pattern, and variable cost input items such as fertilizer and liming materials were more procyclical than total farm inputs.

Very little cyclical adjustment occurs in farm employment, possibly reflecting the greater fixity of farm than nonfarm labor, and the rising unemployment and difficulty of finding jobs in the nonfarm sector during business declines.

Farm wage rates adjust sharply to cyclical changes in demand. In contrast, in the manufacturing sector wage rates are relatively stable and employment makes a greater procyclical adjustment.

Farm commodity prices adjust sharply to shifts in demand, moving procyclically at about twice the rate of change for wholesale industrial prices.

Farm income adjustments are not significantly different from nominal GNP adjustments. On the downside of the cycles realized gross farm income declined at about the same rate as GNP and realized net farm income at a slightly faster rate, but on the upside of the cycles GNP rose at a faster rate than farm income, possibly reflecting early post World War II adjustments in world agriculture.

Monetary actions probably have less impact on farm finance than on nonfarm finance over the course of most business cycles. Interest rates charged farmers do not change as much as rates charged other borrowers during the course of business cycles. Over the longer run, however, all borrowers must pay the rates caused by monetary actions which lead to changes in anticipated inflation.

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Table 1

Changes in Farm Output and Inputs During Business Cycle Stages [a]

(Compound Annual Rates of Change)

Contraction Period	Total Output	Inputs		Expansion Period	Total Output	Inputs	
		Total	Fertilizer and Lime			Total	Fertilizer and Lime
1920-21	- 11.5 %	- 3.4 %	- 27.8 %	1921-23	+ 3.2 %	+ 0.9 %	+ 9.0 %
1923-24	- 1.4	+ 2.0	+ 3.9	1924-26	+ 1.2	+ 1.4	+ 3.3
1926-27	- 1.4	- 2.3	- 8.4	1927-29	- 0.6	+ 1.4	+ 8.3
1929-33	- 2.6	- 2.0	- 15.9	1933-37	+ 2.6	+ 0.6	+ 16.1
1937-38	- 4.2	- 3.4	- 7.0	1938-41	+ 1.5	+ 2.0	+ 5.0
1948-49	- 2.5	+ 0.8	- 0.2	1949-53	+ 0.3	+ 0.3	+ 0.8
1953-54	- 1.4	- 1.2	- 1.2	1954-57	- 0.7	- 1.2	- 5.0
1957-58	+ 6.1	- 0.2	- 4.0	1958-60	+ 0.9	- 0.7	- 1.1
1960-61	- 1.4	- 0.2	+ 0.2	1961-69	+ 0.3	+ 0.6	+ 1.1
1969-70	- 2.4	- 1.2	- 4.5				
Number of years	13	13	13		30	30	30
Average rate	- 2.3 %	- 1.3 %	- 8.7 %		+ 0.9 %	+ 0.6 %	+ 3.8 %

[a] Excludes World War II and early post-war years. Data are compound annual rates of change during the periods, adjusted for trend rates of change from 1920 to 1970 except for fertilizer and lime which was adjusted for trend rates of change from 1920 to 1940 and 1940 to 1970 [18]. Years in which NBER trough and peak months occurred are used as reference cycle dates [14].

Table 2

Changes in Industrial Production and Gross National Product
During Business Cycle Stages [a]

(Compound Annual Rates of Change)

Contraction Period	Industrial Production	Real GNP	Expansion Period	Industrial Production	Real GNP
1920–21	– 27.1 %	– 5.9 %	1921–23	+ 19.0 %	+ 5.8 %
1923–24	– 9.8	– 0.6	1924–26	+ 3.8	+ 0.8
1926–27	– 4.0	– 2.7	1927–29	+ 3.5	0
1929–33	– 14.8	– 12.3	1933–37	+ 9.0	+ 5.9
1937–38	– 25.1	– 8.7	1938–41	+ 17.5	+ 7.4
1948–49	– 9.4	– 3.5	1949–53	+ 5.0	+ 2.6
1953–54	– 9.3	– 5.0	1954–57	+ 2.0	0
1957–58	– 10.5	– 4.7	1958–60	+ 2.9	+ 0.8
1960–61	– 3.2	– 1.7	1961–69	+ 2.5	+ 1.2
1969–70	– 7.7	– 4.0			
Number of years	13	13		30	30
Average rate	– 12.7 %	– 6.6 %		+ 6.4 %	+ 2.7 %

[a] See Table 1 for description of methods used. All rates adjusted for 1920–70 trend [3, 5, 14, 21].

Table 3

Changes in Farm and Nonfarm Prices During Business Cycle Stages [a]

(Compound Annual Rates of Change)

Contraction Period	All Farm Products	Wholesale Prices Industrial Commodities	Consumer Prices All Items		Expansion Period	All Farm Products	Wholesale Prices Industrial Commodities	Consumer Prices All Items
920-21	- 41.8 %	- 35.5 %	- 12.0 %		1921-23	+ 6.4 %	- 0.4 %	- 3.7
923-24	+ 0.1	- 5.0	- 1.1		1924-26	+ 0.1	- 0.4	+ 0.4
926-27	- 4.0	- 6.5	- 3.2		1927-29	+ 2.2	- 1.9	- 2.0
929-33	- 17.7	- 6.6	- 8.0		1933-37	+ 14.3	+ 4.1	+ 1.3
937-38	- 21.1	- 4.5	- 3.2		1938-41	+ 7.9	+ 2.4	+ 0.2
948-49	- 13.5	- 2.6	- 2.3		1949-53	- 0.1	+ 2.5	+ 1.6
953-54	- 4.1	- 0.3	- 0.8		1954-57	- 2.1	+ 2.7	+ 0.2
957-58	+ 5.8	- 0.2	+ 1.4		1958-60	- 2.8	+ 0.4	- 0.1
960-61	- 0.2	- 1.0	- 0.3		1961-69	+ 1.1	+ 0.9	+ 1.3
969-70	+ 1.2	+ 3.3	+ 4.6					
umber of years	13	13	13			30	30	30
verage rate	- 11.4 %	- 6.1 %	- 3.8 %			+ 3.2 %	+ 1.5 %	+ 0.4

See Table 1 for description of methods used. All rates adjusted for 1920-70 trend [5, 14, 17, 20].

Table 4

Changes in Farm and Manufacturing Labor and Average Wage Rates During Business Cycle Stages [a]

(Compound Annual Rates of Change)

	Farm Workers		Manufacturing Employees (c)			Farm Workers		Manufacturing Employees	
Contraction Period	Hours Worked	Wage Rates (b)	Number	Hourly Wage Rates	Expansion Period	Hours Worked	Wage Rates (b)	Number	Hourly Wage Rates
1920-21	- 5.2 %	- 38.4 %	- 23.7 %	- 10.9 %	1921-23	+ 4.7 %	+ 1.9 %	+ 10.5 %	- 3.0
1923-24	+ 3.7	+ 2.7	- 7.3	+ 1.1	1924-26	+ 3.8	- 2.8	+ 1.3	- 3.6
1926-27	- 1.3	- 2.5	- 2.7	- 3.3	1927-29	+ 3.1	- 2.6	+ 2.3	- 2.3
1929-33	+ 1.9	- 20.2	- 10.0	- 9.7	1933-37	+ 2.1	+ 6.9	+ 8.7	+ 5.3
1937-38	- 4.3	- 2.3	- 13.7	- 3.2	1938-41	+ 1.7	+ 2.0	+ 10.6	+ 1.5
1948-49	- 1.1	- 5.8	- 8.5	+ 0.1	1949-53	- 1.0	+ 1.4	+ 3.8	+ 2.3
1953-54	- 2.1	- 3.7	- 8.2	- 1.4	1954-57	- 3.4	- 0.1	+ 0.5	+ 1.1
1957-58	- 2.0	- 0.2	- 8.4	- 0.8	1958-60	- 1.0	+ 1.8	+ 1.4	- 0.2
1960-61	- 1.4	- 1.5	- 4.0	- 1.0	1961-69	- 1.6	+ 2.8	+ 1.5	+ 0.4
1969-70	0	+ 4.1	- 5.2	+ 1.6					
Number of years	13	13	13	13		30	30	30	30
Average rate	- 0.5 %	- 9.9 %	- 9.4 %	- 4.4 %		+ 0.3 %	+ 1.9 %	+ 4.2 %	+ 0.8

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[a] See Table 1 for description of methods used. All rates adjusted for 1920-70 trend [14, 17, 18, 20, 22].

[b] Hired labor only.

[c] Production workers only.

Table 5

Changes in Realized Gross and Net Farm Income and Nominal GNP During Business Cycle Stages [a]

(Compound Annual Rates of Change)

Contraction Period	Realized Gross Farm Income	Realized Net Farm Income	Nominal GNP	Expansion Period	Realized Gross Farm Income	Realized Net Farm Income	Nominal GNP
1920-21	- 36.4 %	- 46.3 %	- 21.7 %	1921-23	+ 4.8 %	+ 12.9 %	+ 7.9
1923-24	+ 2.6	+ 3.2	- 3.2	1924-26	- 0.3	+ 4.5	+ 5.6
1926-27	- 2.2	- 2.2	- 6.3	1927-29	- 0.3	+ 2.0	+ 3.5
1929-33	- 18.4	- 20.8	- 19.2	1933-37	+ 9.6	+ 15.5	+ 12.9
1937-38	- 14.5	- 22.8	- 11.2	1938-41	+ 8.6	+ 12.0	+ 13.7
1948-49	- 11.3	- 15.4	- 5.3	1949-53	0	- 0.6	+ 9.2
1953-54	- 6.6	- 14.1	- 4.8	1954-57	- 2.8	- 7.2	+ 6.5
1957-58	+ 9.1	+ 17.8	- 3.5	1958-60	- 1.7	- 3.8	+ 6.1
1960-61	- 0.1	+ 0.5	- 1.6	1961-69	+ 1.3	+ 0.8	+ 7.5
1969-70	+ 2.0	- 0.8	+ 0.1				
Number of years	13	13	13		30	30	30
Average rate	- 10.1 %	- 12.6 %	- 10.3 %		+ 2.4 %	+ 3.7 %	+ 8.5

[a] See Table 1 for description of methods used. Farm income data excludes government payments. All rates adjusted for 1920-70 trend [14, 19, 20, 21].