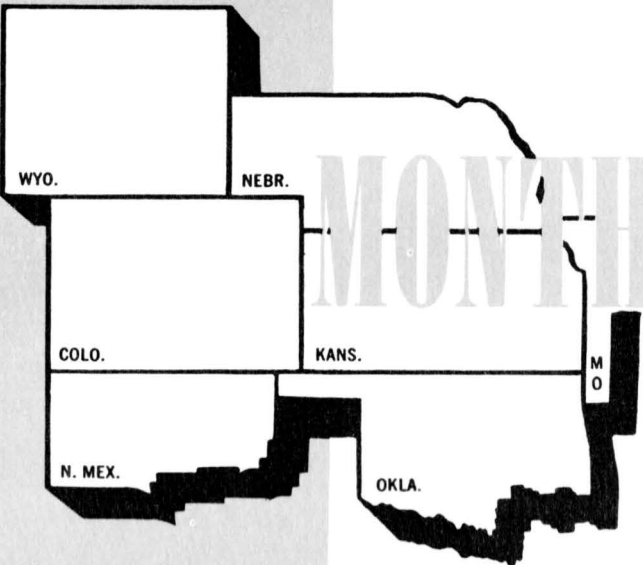


September-October 1967



MONTHLY REVIEW

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Educational Expenditures In the United States

By Richard F. Young

KNOWLEDGE CAN be sought for its own sake and looked upon as an end in itself. In this respect, education enriches and adds meaning to our lives. Yet, many pursue an education with an eye toward enhancing their productive and earning potential. Education engaged in for the latter reasons increases one's alternatives and can be regarded as an investment. The purpose of this article is to consider the volume of educational expenditures in the United States—their level, their growth, and some of the reasons for which they are undertaken.

The notion that men invest in themselves is not new. Benjamin Franklin once remarked that “an investment in knowledge pays the best interest.” The noted 18th century British philosopher-economist, Adam Smith, included all of the acquired and useful abilities of all of the inhabitants of a country as a part of capital. This approach necessitates a broad concept of capital and, while several prominent economists have acknowledged the validity of the human capital thesis, the main stream of economic thought accepts a more narrowly defined view of both investment and the stock of capital.

The post-World War II period has provided a context favorable to the revival of interest in investments in education. Studies and develop-

ments in the United States, Western Europe, and the underdeveloped countries have focused attention on the role of human resources in the process of economic growth. Edward F. Denison and Theodore W. Schultz have attributed much of the income growth in the United States to increases in the quality of the human input. Schultz estimates that between 1889 and 1919 the rate of increase in labor and capital combined was only 67 per cent as large as that of income. Even more striking is his finding that between 1919 and 1957 increases in man-hours worked and tangible capital accounted for only 32 per cent of the growth in income. Schultz believes that the size of this residual implies that a substantial part of this growth can be accounted for by examining improvements in the factors of production. This, in turn, generates an interest in education as a means of improving the labor input. Denison attributes to education about 23 per cent of the growth of real national income in the Nation from 1929 to 1957.¹

¹Theodore W. Schultz, “Investment in Man: An Economist's View,” *The Social Service Review* (June 1959), pp. 114-115; and Edward F. Denison, “Education, Economic Growth, and Gaps in Information,” *The Journal of Political Economy* (Supplement) (October 1962), pp. 124-128.

Further, the amazing postwar recovery of Western Europe is evidence that, where the labor force is educated and trained, the injection of physical capital may well provide the missing link needed to accelerate economic growth. Much of the growth of various European economies has been explained in terms of the stock of, and investment in, human knowledge and abilities. On the other hand, the disappointing performance of the underdeveloped countries suggests that additions to the stock of physical capital bring less than satisfactory results when sufficient quantities of trained and educated persons do not exist. This problem has been compounded further by the reluctance of many poorer nations to accept aid in the form of managerial and technical talent, preferring to man what industry they have with their own people.

Educational expenditures are considerable and are made partly to increase productive capabilities. The foregoing suggests the array of evidence that can be marshaled to support the view that at least a part of outlays for education must be considered an investment that contributes heavily to real income growth.

EXPENDITURES

Historically, the financing of education has been largely a state, local, and individual problem. However, Federal assistance for education dates back to 1785 and the beginning of allocation of public lands in support of schools. The path of rising Federal educational expenditures has been marked by such milestones as the Morrill Act of 1862, which authorized grants of land or scrip for the establishment of land-grant colleges, and the Smith-Hughes Act of 1917 and the George-Barden Act of 1946, both of which provided support for vocational and technical education. In addition, Federal aid to education has included such activities as establishment of veterans' educational benefits, National Defense Education Act, and Federal construction and operating assistance for schools in districts affected by Federal activities.

Federal administrative budget expenditures for education tripled during the period 1961 to 1966 (Table 1). Estimated expenditures for 1967 and 1968 indicate an extension of this trend. The accounting convention according to

Table 1

ADMINISTRATIVE BUDGET EXPENDITURES FOR EDUCATION*
(Fiscal years in millions of dollars)

Description	Actual						Estimate	
	1961	1962	1963	1964	1965	1966	1967	1968
Elementary and Secondary Education	332	337	392	404	418	1,368	1,827	2,000
Science Education and Basic Research	143	183	206	310	309	368	395	455
Higher Education	286	350	428	383	413	701	451	-376
Other Aid to Education	181	207	219	241	405	397	631	737
Total	943	1,076	1,244	1,339	1,544	2,834	3,304	2,816
Total Administrative Budget Expenditures	81,515	87,787	92,642	97,684	96,507	106,978	126,729	135,033

*Does not include: foreign information and exchange activities, veterans' education and training benefits, school lunch programs, vocational rehabilitation programs, or military training.

SOURCE: "The Budget in Brief," Executive Office of the President, Bureau of the Budget, January 24, 1967.

Table 2

ESTIMATED EXPENDITURES BY EDUCATIONAL INSTITUTIONS, BY SOURCE OF FUNDS,
UNITED STATES, 1955-56 TO 1966-67
(Billions of dollars)

Source of Funds	1955-56	1957-58	1959-60	1961-62	1963-64	1964-65	1965-66	1966-67
All Levels (Total Public and Nonpublic)	16.8	21.1	24.7	29.6	36.6	40.0	45.1	48.8
Federal.....	1.0	1.4	1.8	2.4	3.4	3.8	5.4	6.1
State.....	4.8	6.2	7.3	8.9	10.9	11.9	13.3	14.7
Local.....	7.2	8.5	9.6	11.2	12.9	14.1	14.9	15.7
All Other.....	3.8	5.0	6.0	7.1	9.4	10.2	11.5	12.3
Elementary and Secondary (Total Public and Nonpublic)	12.7	15.8	18.0	21.1	24.8	26.8	29.9	32.0
Federal.....	0.5	0.7	0.8	0.9	1.0	1.0	2.1	2.3
State.....	3.7	4.8	5.7	6.8	8.1	8.7	9.7	10.7
Local.....	7.1	8.4	9.4	11.0	12.6	13.8	14.5	15.3
All Other.....	1.4	1.9	2.1	2.4	3.1	3.3	3.6	3.7
Institutions of Higher Education (Total Public and Nonpublic)	4.1	5.3	6.7	8.5	11.8	13.2	15.2	16.8
Federal.....	0.5	0.7	1.0	1.5	2.4	2.8	3.3	3.8
State.....	1.1	1.4	1.6	2.1	2.8	3.2	3.6	4.0
Local.....	0.1	0.1	0.2	0.2	0.3	0.3	0.4	0.4
All Other.....	2.4	3.1	3.9	4.7	6.3	6.9	7.9	8.6

SOURCE: Projections of Educational Statistics to 1975-76, U. S. Department of Health, Education, and Welfare, 1966.

which loan participation sales are recorded in the budget as a negative expenditure is responsible for the apparent slower growth in expenditures for education from 1966 to 1967, and the apparent decline from 1967 to 1968. For example, in fiscal 1968 estimated sales of \$1.8 billion of shares in pools of loans for college housing and academic facilities and of student loans reduce the *net* administrative budget expenditures for education to \$2.8 billion (Table 1), while the extent of such Federal aid is actually \$4.6 billion. This book-keeping transaction is reflected in the "Higher Education" category of Table 1; the pattern of increasing Federal aid to education is clear in the other classifications.

Federal support of education, training, and related activities goes beyond aid to education narrowly defined, as presented in Table 1, and includes such programs as vocational education; work-training and other adult or continuing education; training of Federal personnel, both military and civilian; and international educa-

tional activities. Total Federal outlays for this broader functional classification of "Education, Training, and Related Programs" have increased from \$7.3 billion of actual expenditures in fiscal 1966, to \$10 billion in fiscal 1967 and \$11 billion in fiscal 1968. (Expenditures for 1967 and 1968 are budget estimates before participation sales are netted out.)²

Federal outlays represent a rather small segment of the total sources of funds available for educational expenditure. The reason for discussing them first is twofold. First, they are indicative of a growing level of educational expenditures—in which Federal Government outlays are growing faster than other sources of funds and therefore rapidly increasing their relative share—and, second, data on Federal outlays are available in a manner that is reasonably concise and consistent. Perspective may now be gained by placing Federal contri-

²"Special Analyses—Budget of the United States," Fiscal Year 1968 (Washington: U. S. Government Printing Office), p. 95.

Table 3
RELATIVE SHARES OF
ESTIMATED EXPENDITURES BY EDUCATIONAL INSTITUTIONS, BY SOURCE OF FUNDS,
UNITED STATES, 1955-56 TO 1966-67

<u>Source of Funds</u>	<u>1955-56</u>	<u>1957-58</u>	<u>1959-60</u>	<u>1961-62</u>	<u>1963-64</u>	<u>1964-65</u>	<u>1965-66</u>	<u>1966-67</u>
	(Per Cent)							
All Levels (Total Public and Nonpublic)								
Federal.....	5.9	6.6	7.5	8.3	9.3	9.5	12.0	12.5
State.....	28.8	29.4	29.5	30.0	29.8	29.8	29.5	30.1
Local.....	42.9	40.2	39.0	37.3	35.2	35.2	33.0	32.2
All Other.....	22.4	23.8	24.0	24.4	25.7	25.5	25.5	25.2
Elementary and Secondary (Total Public and Nonpublic)								
Federal.....	3.9	3.9	4.3	4.2	4.0	3.7	7.0	7.2
State.....	29.7	30.5	31.4	31.8	32.7	32.5	32.5	33.4
Local.....	56.2	53.5	52.4	51.9	50.8	51.5	48.5	47.8
All Other.....	10.2	12.1	11.9	12.1	12.5	12.3	12.0	11.6
Institutions of Higher Education (Total Public and Nonpublic)								
Federal.....	12.1	13.6	16.0	18.1	20.0	20.9	21.7	22.7
State.....	26.5	26.9	24.9	24.7	23.9	23.9	23.9	23.5
Local.....	3.0	3.0	2.8	2.6	2.4	2.4	2.4	2.4
All Other.....	58.4	56.5	56.3	54.6	53.7	52.8	52.0	51.4

SOURCE: Projections of Educational Statistics to 1975-76, U. S. Department of Health, Education, and Welfare, 1966.

butions in the context of total sources of funds available to educational institutions.

Federal funds made available to educational institutions—though large, and growing—now (1966-67) comprise only about one eighth of all such outlays in the Nation (Table 2). While some realignment has taken place in the shares underwritten, the absolute amount of funds made available to, and expended by, educational institutions has changed dramatically. Over the period 1955-56 to 1966-67, total resources tripled. Federal dollars made available increased—from a small base—six times, state sources three times, local outlays doubled, and nonpublic sources of funds more than tripled their respective efforts.

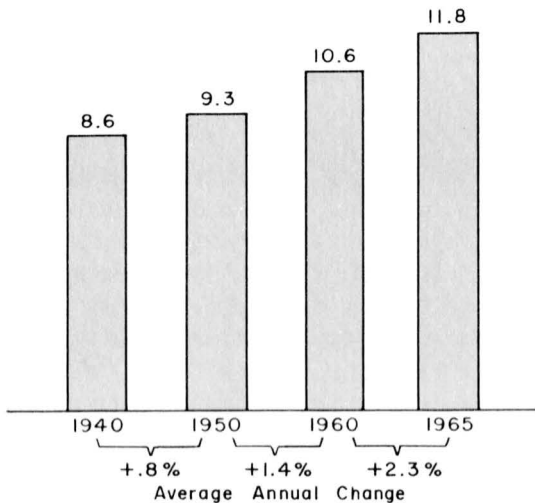
While total support for elementary and secondary education was about twice that of higher education, the rate of growth in funds available for expenditure by the latter has been more rapid. There also are significant differences in funding sources. Higher education relies quite heavily on nonpublic funds and receives relatively little support from local

governments. In the case of elementary and secondary education, however, precisely the opposite is true.

Scrutinizing data indicating sources of revenue available for expenditure by educational institutions, one finds that the Federal share has more than doubled over the period 1955-56 to 1966-67. The share assumed by the state, despite a decline in the share of the financial support for institutions of higher education, rose by 5 per cent, the local burden declined by one fourth, and the amount from nonpublic sources increased by 13 per cent (Table 3).

Private or individual outlays for education certainly are germane to this discussion, yet a paucity of consistent data reflects the difficulties involved in attempting to quantify such outlays. The data for nonpublic funds available to educational institutions (Tables 2 and 3) shed some light on this subject but other, or nonpublic, sources cannot be equated with private, or individual, expenditures. Many private educational costs—whether direct or

Chart 1
MEDIAN SCHOOL YEARS COMPLETED
ADULT POPULATION



SOURCE: *Statistical Abstract of the United States*, 1966, p. 113.

imputed—are met without a corresponding amount received or expended by the educational institution attended.

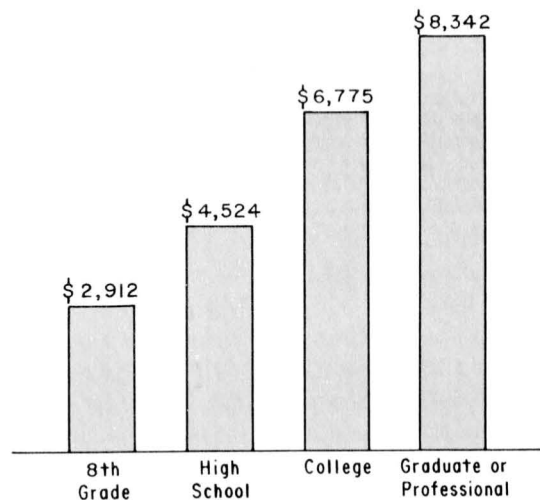
RESULTS

If expenditures for education have been advancing, so have the level of educational attainment and the presumed benefits. In 1940, the median number of school years completed by the adult population was only 8.6. By 1950, it had risen to 9.3; by 1960, it was 10.6; and in 1965 the median attainment stood at 11.8 years. Not only is the number of years of academic training increasing, it is increasing at an accelerating pace (Chart 1). Assuming that approximately half of the adult population has completed high school (Chart 1), calculations (Chart 2) indicate that those with eighth grade educations earn only two thirds as much as those with high school diplomas and that—taking the median—college graduates make one and one half times as much as high school graduates. Comparable data indicate that those with graduate school or professional training

earn in excess of 80 per cent more than high school graduates. Therefore, while the greatest income differential occurs between persons with at least one college degree and those without a degree, substantial differences in median remuneration exist between all of the levels of education depicted.

A definite cause-and-effect relationship between increases in the level of educational attainment and increases in labor income and productivity might be difficult to establish, but the fact that education and training enhance one's earning capabilities is hard to deny. The benefits of educational advance may be depicted further by increases in the return to labor as a factor of economic production. While a part of this return to labor is certainly attributable to increases in the quantity and quality of the other factors—land, physical capital, and enterprise—a large portion of increases in aggregate labor income must be regarded as the result of increases not only in the quantity

Chart 2
MEDIAN ANNUAL INCOMES
BY LEVEL OF EDUCATIONAL ATTAINMENT



TECHNICAL NOTE: Persons 25 years old and over as of March 1965.

SOURCE: *Statistical Abstract of the United States*, 1966, p. 115.

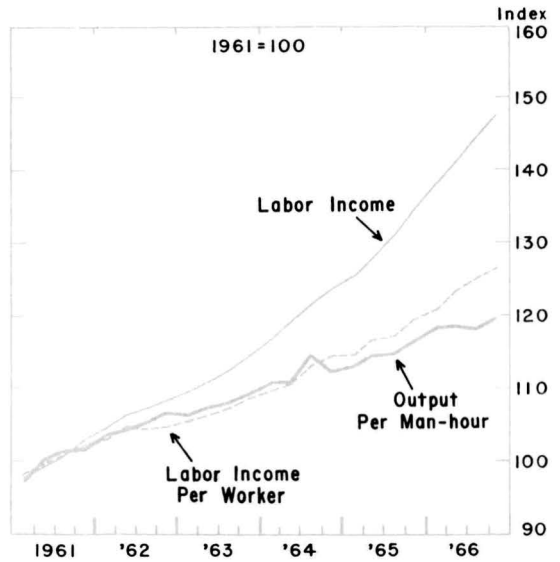
but also in the quality of labor. The crux of this matter rests upon the relationship whereby education enhances one's abilities and ultimately increases incomes as a result of increases in labor productivity (Chart 3). Increases in individual remuneration are indicated by a per worker index of labor income. Increasing labor productivity also has been charted, denoting output per man-hour worked.³ From 1961 through most of 1964, labor income per worker and output per man-hour for the whole economy rose at similar rates. As the economic expansion gained momentum in 1965 and 1966, labor incomes advanced more rapidly than labor productivity.

CONCLUDING COMMENTS

Although only a part of education truly represents investment while another part represents consumption, education purely as an investment would be economically attractive and meaningful. Of course, other forms of investment also are necessary for economic development. Attention also should be directed to the type of education needed to induce economic growth, if that is, in fact, the motive behind the outlay. A technical, professional,

³Labor income, in this sense, is the sum of wage and salary disbursements and other labor income. Labor income per worker is labor income divided by the sum of agricultural and nonagricultural wage and salary employment. Output per man-hour is calculated by dividing constant dollar (1958) gross national product by the number of man-hours worked in the entire economy for a comparable period.

Chart 3
LABOR INCOME AND PRODUCTIVITY, 1961-66
QUARTERLY DATA AT SEASONALLY
ADJUSTED ANNUAL RATES



SOURCE: U. S. Department of Commerce and Bureau of Labor Statistics.

or managerial education that would be looked upon quite favorably by those consciously pursuing a return on their educational investment also should be beneficial in furthering economic growth. The extent to which Americans have undertaken outlays for education is impressive, as is the growth of these outlays and the results achieved.

The Impact of Farm Prices On Wholesale and Retail Price Levels

By Gene L. Swackhamer

AGRICULTURAL output has increased at an average annual rate of about 2.1 per cent since 1950, compared with an average population increase of 1.7 per cent in that time. Over the same period, per capita disposable income has increased 2.4 per cent annually in constant (1958) dollars. Agricultural exports have nearly doubled from \$3.4 billion in 1950 to \$6.6 billion in constant dollars in 1966, for an annual rate of increase of about 4.3 per cent. The consequences of these changes seemingly should be straightforward, yet there are many interesting and perplexing exceptions.

With rapidly rising exports, increasing per capita disposable incomes, and an annual population increase nearly sufficient to consume our annual domestic agricultural production increase, few agricultural price problems would be expected. Yet, prices received by farmers continue to fluctuate widely.

Strong domestic and export demands of the past few years have reduced excess stocks of many commodities to less burdensome levels and, in some cases, to near shortages, thus strengthening commodity prices. Livestock prices, recovering from sharp increases in supplies in 1964, increased through 1965 and 1966. In fact, the upward movement of agricultural prices in much of 1966 may have reflected considerable speculation based upon anticipated world food shortages in addition to the price increase resulting from a declining-supply, strong-demand interaction. Following this deduction a step further, to the 10 per cent drop in farm prices from September 1966 to April 1967, might lead one to conclude that most of the price softness of the past winter

can be attributed to a counter-reaction from the sharp increases during 1965 and early 1966, once the world food demand issue matured in perspective.

A major factor in farm price weakness during the spring of 1967 was the abundance of supplies of some major farm commodities such as red meats, poultry, and citrus. But, given the supply situation that existed between September 1966 and April 1967, the strength of export demands, the continuing high levels of personal income, and steady population growth, it seems unlikely that the full downward thrust of farm prices during the past winter can be accounted for totally by the actual supply-demand considerations that prevailed. Even though the challenge of price analysis is to accurately predict the price impact of supply-and-demand changes in a dynamic environment, one cannot overlook the possibility that, in the market environment existing for most farm commodities, prices may overreact—reflecting the influence of speculation and market imperfections.

One of the most common methods of measuring demand-and-supply price relationships is the estimation of price and income elasticity of demand for goods at the farm and retail levels. The concept of elasticity need not be confusing: it is the responsiveness of quantity to price or quantity to income. Elasticity is the name given to the percentage change in quantity associated with a 1 per cent change in price or income. If elasticity is less than one, demand is called inelastic—meaning that, for a small decrease in the price of a good, the percentage increase in quantity sold will be

proportionally less than the price percentage decrease. If elasticity is greater than one, it is called elastic—meaning that, for a small price decrease, the percentage increase in quantity sold will exceed the percentage decrease in price.

Numerous studies of agricultural prices have revealed that price and income elasticity of demand for foods, measured at the farm level, generally are very inelastic—a price increase of 1 per cent may reduce per capita use of food at the farm level by about .1 per cent, or a 1 per cent increase in real income per capita may lead to a .1 per cent increase in per capita food use. At the retail level, price elasticity of demand also is quite inelastic—ranging in estimates from $-.3$ to $-.25$.¹ Studies of income and expenditure data from 1950-62 have shown that income elasticity of demand at retail is somewhat more elastic—with a 1 per cent increase in personal disposable income being associated with a .49 per cent increase in food consumption and a .95 per cent increase in demand for marketing services.

Many studies have confirmed these low elasticity estimates. Work in this area is important, since it explains how a comparatively small change in supply can have a drastic effect on farm prices. The elasticity of demand at the farm level is lower than at the retail level because of the relative inflexibility of distributors' and middlemen's margins. Middlemen's margins tend to remain rather stable through periods of high and low agricultural prices that result from changes in supplies. On the other hand, the margin, or spread, between the price of a good at the farm and at retail, tends to change with changing general economic conditions. As a result of several years of economic prosperity, with consumers de-

manding more services and the costs of these services becoming more expensive, the spread has continually widened.

In the past few years, we have witnessed both a supply-oriented change in agricultural prices and a prosperity-oriented change in marketing margins. Farm prices rose from a low level for recent years in 1964 to a high in late 1966 as farm supplies dwindled in the presence of a strong demand. At the same time, costs of transporting, processing, packaging, and retailing food increased. The farm-to-retail price spread widened almost unnoticed, since both farm and retail prices were moving in the same direction. As farm prices retreated between September 1966 and April 1967, middlemen's margins increased relatively because of the rigidity of numerous marketing charges. As a result, a smaller downward movement in retail food prices took place.

1966 PRICE MOVEMENTS IN RETROSPECT

Price analysis proved to be very hazardous last year as agricultural and retail food prices rose more rapidly than was anticipated. Early in the year, average retail food prices were predicted to show a yearly advance comparable to the 2.3 per cent rise in 1965. Since the first quarter of 1966 was expected to show an increase over the fourth quarter of 1965—which was 3.5 per cent above a year earlier—offsetting declines were expected for the last half of 1966. Supply increases that would bring declines in food prices and moderate the rise of the total wholesale and consumer price indexes were anticipated.

Much of the rapid advance of the Consumer Price Index (CPI) through the winter months (1965-66) was attributed to the steep rise in food prices. By the end of the first quarter of 1966, however, declines in the grain, livestock, and poultry components of the Wholesale Price Index (WPI) were credited with reversing the upward trend of the farm products index. Price analysts, who be-

¹Geoffrey S. Shepherd, *Agricultural Price Analysis* (Ames, Iowa: Iowa State University Press, 1963), pp. 25-26. The minus sign indicates that quantity moves inversely to price changes.

lieved that the rise in food prices owed much more to curtailment of supplies than to expansion of demands and increasing marketing costs, anticipated lower retail food costs as a result of lower farm product prices. They saw increasing production of beef, poultry, and of some crop foods—and with greater fall pork output also expected—as evidence of supply expansion. On the demand side, however, there remained considerable strength from increasing disposable incomes and from heavy military procurement. This strong demand, bolstered by a strong tendency toward increasing marketing costs, minimized the downward trend in retail food prices.

By May, first-quarter food prices were 6 per cent above the first quarter of 1965 and 2.5 per cent above the fourth quarter of 1965. The farm-retail marketing spread was expected to widen only slightly. Little price decline was anticipated at retail until summer because retail price changes tend to lag behind those at wholesale and because of underlying seasonal strength in early summer retail prices.

By August 1966, retail food prices were 5 per cent above the year before and second-quarter prices were 1 per cent above the first quarter, despite a small decline in average prices received by farmers and in wholesale food prices. The United States Department of Agriculture (USDA), in August, believed that retail food prices probably had reached a seasonal high in July—they expected a 1-2 per cent decline from the peak, with retail food prices for the year averaging around 4 per cent above 1965.

By September, the WPI had risen 3.75 per cent over the previous 12 months. Prices of foodstuffs had increased 8 per cent but, because their importance in the index is only a fourth, they accounted for but half of the rise in the total index. The CPI had risen more than 3.5 per cent from a year earlier.

In November, the USDA reported that the unusual price rise that developed in 1966 could

Table 1
BUREAU OF LABOR STATISTICS AND FEDERAL
RESERVE GROUPINGS OF WHOLESALE PRICES
Percentage Change in Annual Rates

	Successive Six-Month Periods		
	Oct. 1965 to Apr. 1966	Apr. 1966 to Oct. 1966	Oct. 1966 to Apr. 1967
All Items	4.7	1.3	-1.7
BLS Price Groups			
Farm Products and Processed Foods and Feeds	9.8	.2	-9.9
Farm Products	14.1	-3.8	-13.0
Processed Foods and Feeds	6.9	3.3	-7.5
Industrial Commodities	2.9	1.9	1.3
FR Price Groups			
Industrial Commodities	2.7	1.4	1.0
Total Materials	3.5	.2	.6
Total Products	1.7	2.9	1.9
Foods and Feedstuffs	9.7	2.0	-10.1
Livestock and Products	12.3	.2	-16.2
Crops and Products	6.7	4.1	-2.9

be traced partly to reduced supplies of some important foods, but mostly was due to the strong advance of demand for food products. The 1966 price rise of 5 per cent was twice that of 1965 and the largest annual increase since an 11 per cent jump in 1951. The USDA, in November 1966, forecast high average retail food prices for 1967—due to a strong economy and increasing defense requirements—but did not expect the increase to approach the 5 per cent rise of 1966.

Where the Change Occurred

A more detailed examination of wholesale and consumer prices shows where major changes occurred. Table 1 gives percentage changes in annual rates for successive six-month periods of the WPI as reported by the Bureau of Labor Statistics (BLS) and for special Federal Reserve (FR) groupings of WPI components.

The weighted contribution of farm products and processed foods to the 4.7 per cent annual rate of increase in the WPI (between October 1965 and April 1966) was approximately 2.5

percentage points, or a little more than 50 per cent of the rise. The remaining portion of the increase—2.2 percentage points—came from all other commodities. In the more detailed subdivision of FR groupings, it can be seen that the percentage increase of 9.7 for all agricultural foods and feedstuffs was influenced strongly by a 12.3 per cent annual rate of increase for livestock and livestock products. Price increases for total industrial materials exceeded those for total industrial products.

In the period from April to October 1966, the annual rate of increase for all items slowed to 1.3 per cent, reflecting a reversal in the direction of farm product prices and a significant decline in the annual rate of increase in processed foods and other commodities. Somewhat surprisingly, all of the FR groupings for agricultural commodities showed a positive annual rate of increase, though at a much slower rate. This is due to the distribution of product prices to the respective livestock and crop farm price groups which tended to offset the farm price declines. The switch in rates of increase for industrial product and material prices was also noticeable.

From October 1966 to April 1967, farm-product prices continued to decline, as did processed-food prices. Their weight in the index was sufficient to offset a 1.3 per cent annual rate of increase for all other commodities producing a -1.7 per cent annual rate of change in the all-items index. Within FR groupings, livestock and livestock products contributed substantially to the decline in prices for all agricultural commodities.

Within the CPI, change in food prices also influenced the total index, but the magnitude of change was lessened by the rigidity and upward bias of marketing charges—especially with the growing demand for additional food services. Between October 1965 and April 1966, the CPI rose at an annual rate of 3.8 per cent (Table 2), contrasted to its more moderate average annual rate of increase of 1.2

Table 2
CONSUMER PRICES
Percentage Change in Annual Rates

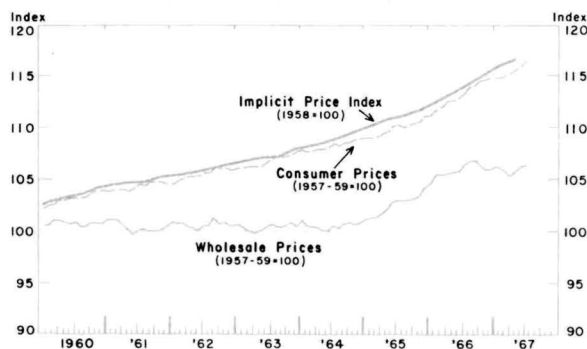
	Successive Six-Month Periods		
	Oct. 1965 to Apr. 1966	Apr. 1966 to Oct. 1966	Oct. 1966 to Apr. 1967
All Items	3.8	3.6	1.4
Total Food	7.8	2.8	-3.3
Food at Home	9.1	2.0	-5.4
Food Away from Home	4.0	5.9	5.0
Commodities Less Food	1.3	3.0	1.5
Total Nondurables	1.9	3.5	2.7
Total Durables	.4	2.4	-2
Total Services	4.0	4.6	4.0

per cent between 1958 and 1964 (Chart 1). In the October 1965 to April 1966 period, total food accounted for nearly half of the increase, services accounted for about 40 per cent, and other commodities for 10 per cent. During this same period, price increases for food at home represented nearly 90 per cent of the total food-index increase.

Although the annual rate of increase for the total CPI remained at 3.6 per cent from April to October 1966, the rate for food slowed to 2.8 per cent, with the food-at-home component increasing at a 2 per cent annual rate. In contrast to the food-at-home index, food away from home, commodities less food, and total services all increased at a faster rate than the preceding six-month period. Although the reversal of farm product prices was sufficient to dampen the WPI increase to a 1.3 per cent annual rate during this six-month period, the transference to retail prices was slower and considerably less pronounced.

From October 1966 to April 1967, the food-price component of the CPI declined at a 3.3 per cent annual rate. The food-at-home component declined at a 5.4 per cent annual rate, whereas the food-away-from-home part rose at a 5.0 per cent annual rate. Commodities less food prices eased to a 1.5 per cent annual rate of increase, while total services remained at about a 4.0 per cent rate. The net effect of these changes was to slow the rate of increase

Chart 1
MAJOR PRICE INDEXES*



*For a detailed discussion of the Implicit Price Index, refer to "A Look at Some Measures of Inflation," *Monthly Review*, Federal Reserve Bank of Kansas City, March-April 1967.

of the total CPI to a 1.4 per cent annual rate.

Although the farm value of food originating on U. S. farms declined 5 per cent between the third and fourth quarters of 1966, the farm-retail marketing spread rose 3 per cent. The expected decline in retail food prices developed slowly in late 1966, and the hoped for moderation in the rise of the CPI was equally slow in materializing. The total CPI index continued to edge upward as the total food index gradually declined on the strength of declines in prices of food at home.

SOME OBSERVATIONS ON FARM AND FOOD PRICES

Chart 1 shows that the WPI remained nearly stable between 1958 and 1964, while the CPI rose at a steady annual rate of 1.2 per cent. With the rapid advance of farm prices through 1965 and early 1966, the WPI rose over the two-year period at an average annual rate of 2.3 per cent, and the CPI responded with a 2.7 per cent average annual increase. Regardless of which index might be used as a measure of price inflation, both showed a considerably faster advance than in prior years. After a review of price analysis literature covering recent years, several observations seem noteworthy. First, the transition of declining farm prices into lower retail prices normally

occurs with a lag. Second, the size of price declines from the farm level through the various stages of processing and on to retail becomes considerably dampened because of the fixity and relative importance of marketing charges.

Chart 2 compares the two principal subgroups of the CPI food index with the WPI farm-products index. Movements in the total food index closely correspond to those of the food-at-home index. The two indexes are separated by a nearly constant proportion which represents steadily rising food-away-from-home prices—the behavior of which is strongly influenced by the cost of services. Since the price peaks in the fall of 1966, Chart 2 illustrates clearly the effects of adding progressively more marketing charges and services. From October 1966 to April 1967, as the farm product part of the WPI declined at a -13.0 per cent annual rate (Table 1), CPI food-at-home prices declined at a -5.4 per cent rate, total food at -3.3 per cent, and food-away-from-home prices rose at a 5.0 per cent rate (Table 2).

Although Chart 2 dramatically points out the effect of rigidity and upward bias in marketing charges and services, an important food-price measure—WPI processed foods—was omitted. In Chart 3, the movements of food-at-home prices are contrasted to those for pro-

Chart 2
THE CONSUMER FOOD PRICE INDEX, ITS MAJOR SUBGROUPS, AND THE WHOLESALE FARM PRODUCTS PRICE INDEX

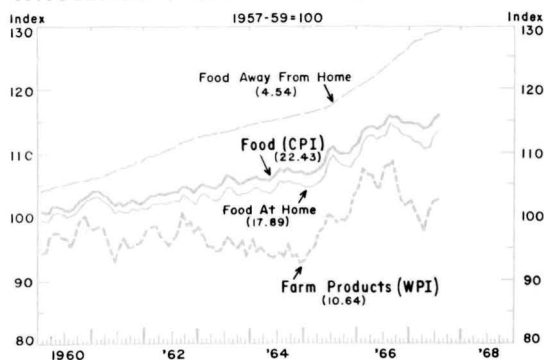
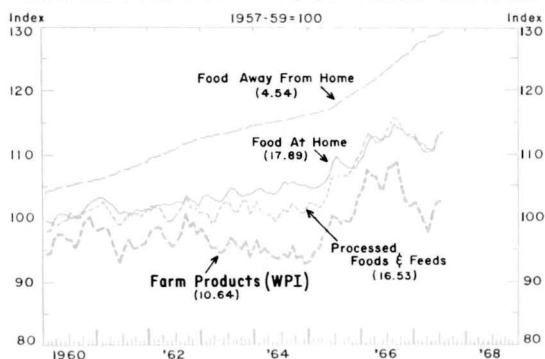


Chart 3
MAJOR FARM AND FOOD PRICE INDEXES



cessed foods. Although these two indexes come close to measuring food prices at a similar point in the marketing process, it would be misleading to use the processed-foods index to predict changes in the food-at-home index. Between late 1962 and early 1965, while farm-product prices declined irregularly, processed-food prices remained irregularly stable and CPI food-at-home prices rose. The WPI processed-foods-price index exceeded the CPI food-at-home-price index throughout much of 1966, but declined at a faster rate than the food-at-home index as farm prices declined. Processed-food prices continued to decline into 1967, but apparently established a floor of resistance during the spring quarter and again show signs of irregular stability at a higher plateau. Again, were it not for the widening of the marketing spread, these prices might have come closer to matching the decline of farm products prices.

A goodness-of-fit evaluation of these indexes, however, in addition to comparing unlikes, ignores the more important policy questions concerning the impact of increases in the total CPI on wage contracts, through cost-of-living escalator clauses. Relief in the rate of increase of the total CPI, as a result of farm product price declines, should be anticipated with caution. Not only do increasing marketing charges contribute to retail food price rigidity, but food-away-from-home prices are relatively more important in the food index than before.

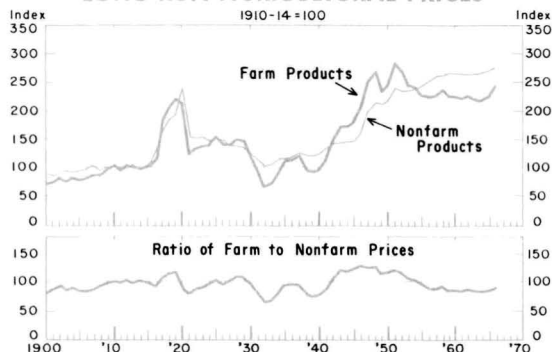
In the most recent weight revision, the relative share of food away from home (a \$22 billion industry) increased from 18 to 20 per cent of the total food index, while the total food index declined from 28 to 22.4 per cent of the total CPI.

LONG-RUN AGRICULTURAL PRICES

The long-term movement of agricultural prices is shown in Chart 4. The top portion of this chart relates farm product wholesale prices to nonfarm products (industrials) on a 1910-14=100 base. Farm product prices have tended to lead industrial prices in economic upswings and precede them down in recessions; however, the post-World War II supply buildup in agriculture led to a long decline in farm prices that was contrary to the historical relationship. In the past few years, as surpluses have been consumed, agricultural prices have returned to higher levels. Important factors causing farm supplies to increase in the post-World War II period were Federal commodity support programs that stimulated production, the adoption of output-expanding technologies, and the development and growth of export markets and trade programs in addition to a steadily expanding domestic demand.

Chart 5 focuses on the 1960's, using an expanded scale and monthly data. The wide volatility of agricultural prices contrasts vividly to the stability of nonfarm prices.

Chart 4
LONG-RUN AGRICULTURAL PRICES



Within the CPI's food index and the WPI's farm-products index can be found the underlying causes for the rapid advance of these two price indexes during the past two years. Chart 6 shows the major commodity groupings within the food index. Of striking contrast are the seasonal patterns of the fruit and vegetables and other foods indexes to the more stable cereals index. Culminating after mid-1966 were the high points of each of the major subgroups—except meat, which had peaked earlier in the year. These peaks occurred four to six months later than many price analysts had predicted. Currently, the meat index has once again begun to climb, while the cereals and dairy indexes remain nearly stable.

The subclassifications of the farm-products index of the WPI are shown in Charts 7 and 8. The farm-products index represents 10.2 per cent of the total WPI, processed foods account for 14.0 per cent, and all commodities—other than food—account for the remainder. As can be seen in Chart 7, much of the seasonal fluctuation is offsetting and dampens the impact of the wide price swings of milk, eggs, and fruit and vegetables. Grains and livestock and poultry carry the greatest relative weight in the farm-products index and are shown in Chart 8. From review of these charts, it becomes obvious that livestock and poultry, milk, and eggs contributed most to the 1965-66 rise in the farm products component of the WPI.

Chart 5
FARM-NONFARM PRICES

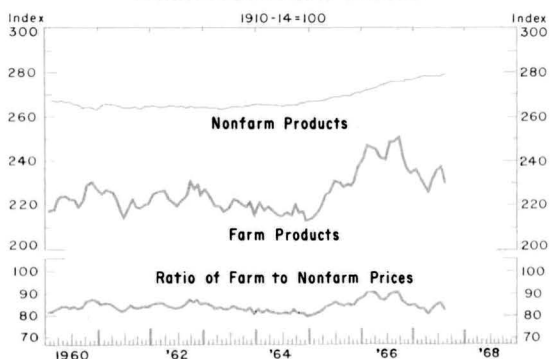
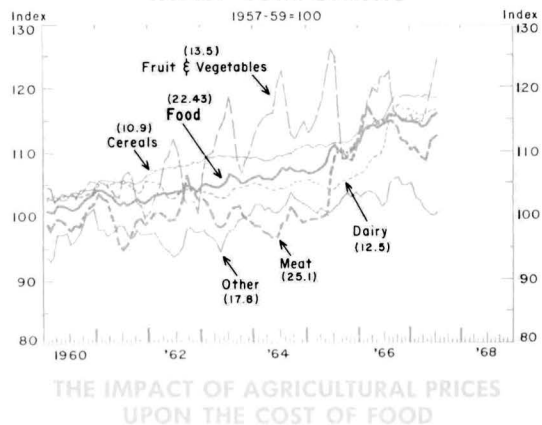


Chart 6
CONSUMER FOOD PRICE INDEX COMPONENTS



Earlier in this article, farm and food price movements were traced through 1966. This section will contrast 1967 developments to those of the past year. Conclusions will be drawn as to the probable changes in the farm-products and processed-foods components of the WPI and of the food components of the CPI.

In the second quarter of 1967, a turnaround in both farm and food prices became apparent. This change resulted from the influence of strong domestic demand, adverse weather on fruit and vegetable supplies, continued strength in retail dairy prices through peak seasonal production as the annual rate of out-

Chart 7
WHOLESALE FARM-PRODUCTS-PRICE INDEX COMPONENTS—PART I

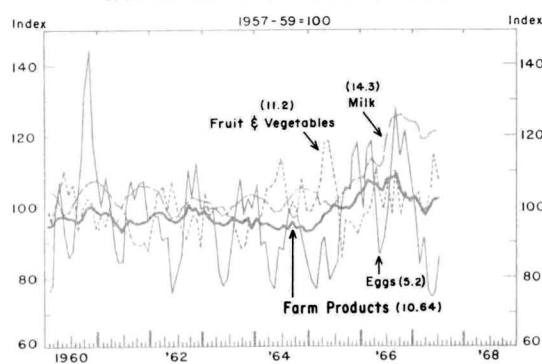
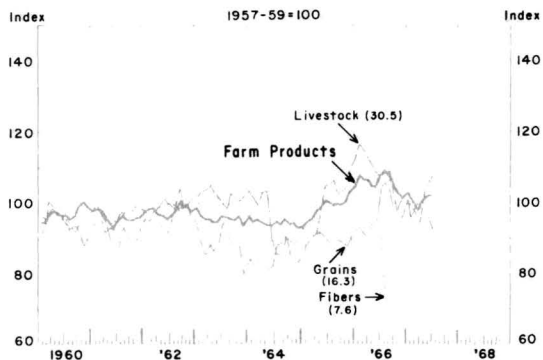


Chart 8
WHOLESALE FARM-PRODUCTS-PRICE INDEX COMPONENTS—PART II
 1957-59=100



put remained near the low of this decade, and a strong seasonal upsurge in meat-animal prices. At the same time export and military demands remained good.

In July, the WPI rose to a new high for the year to date as a result of the sharp recovery in farm-products and processed-foods prices in May and June, while the industrial commodities index remained stable. Even if prices of industrial commodities remain at their current levels throughout the second half of 1967, the all-commodities index likely will exceed its year-ago peak as a result of further increases in farm prices.

At midyear, the cereals index of the CPI was near its 1966 peak level. Dairy product prices showed less seasonal weakness than normal during the first six months and were little more than an index point below their 1966 high—even with demand weakness. Meat prices have reversed a decline and, although they are not likely to exceed their 1966 high, they probably will remain above the lows of the second quarter. The upward movement of fruit and vegetable prices added further pressure to the food-price index, as they rose to their highest level since mid-1965.

In an attempt to more accurately forecast future levels of the CPI food index, Matthews of the USDA developed an econometric model using four basic variables: prices received by

farmers for all crop foods, prices received for all livestock food products, per capita supplies of meat, and per capita disposable income.² Using quarterly data over the period 1954-65 and testing alternative lags, his model produced a reasonably good fit of forecast levels to actual data. By estimating future meat supplies and farm-price levels, the model forecast an average retail-food index of 114.8 for the third quarter and 115.4 for the fourth quarter of 1967. In the first two quarters of 1967, the model understated actual CPI food prices by one-half index point. It seems likely that the third- and fourth-quarter model estimates may understate actual average retail food prices by nearly a full index point.

If total services continue to advance at about a 4.0 per cent annual rate and commodities less food at 1.5 per cent between April and October 1967—as in the previous six-month period—with food prices increasing as forecast above (a 1.7 per cent annual rate), the annual rate of increase in the total CPI would be close to 3 per cent. This is a rate of increase more than double that of the previous six-month period. A faster rate of increase for services or commodities—other than foods—or for foods, would cause the annual rate of increase for the total index to exceed 3 per cent. Already the WPI industrial commodities index has risen above its long stable level of 106.0. The WPI farm-products index shows substantial seasonal weakness but mostly in feed grains where the retail price impact is lagged through future meat production and in some food grains, such as wheat, where the raw commodity accounts for but a small fraction of the finished good. In view of these developments and the nature of marketing costs, an annual increase of 2 per cent or more in retail food prices would not be surprising.

²J. L. Matthews, "Forecasting the Quarterly Retail Food Price Index," *National Food Situation* (U. S. Department of Agriculture, May 1967), pp. 33-37.