Minnesota AGRICULTURAL ECONOMIST

The Anatomy of Inflation

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Everyone knows that prices in the United States are rising—and rising fast. At no other time since the Korean War have the prices people pay for the goods and services of everyday life increased at anything like the current annual pace of about 6 percent. No expert would deny that this is inflation. And no two experts agree on what to do about it. Bitter controversy over the best governmental policies to combat inflation often boils throughout the government, across the business community, and in the universities.

The intent of this article is to examine recent price changes for the things people buy in order to point out those items that are more or less responsible for the recent and continuing inflation. Perhaps we can locate that modern day culprit of Rudyard Kipling's complaint: "For all we take we must pay, but the price is cruel high."

PRICE MEASUREMENT

The indicator of inflation most important to the general public is the Consumer Price Index (CPI). This index, calculated by the U.S. Department of Labor, measures the average changes in the prices of goods and services usually purchased by urban wage earners, clerical workers, and their families. It is based on the prices of about 400 items selected to represent all goods and services purchased. Prices for food, fuels, and a few other items are obtained every month in 56 cities chosen to represent all urban places in the United States. Prices of most other commodities and services are collected every month in the five largest cities and every 3 months in the other cities.

In building the index, a weighted average of price **changes** for all items in each urban location is calculated first. The weight for any item or group of items is the portion of total spending, as determined by periodic consumer surveys, used to purchase that item or group. For example, suppose that the average wage earner or clerical worker spends a total of $500 during a 1-month period and that he spends $100 of that amount on food. Then food would have a weight of .20 (100/500 = .20) in the CPI. The data from all locations are combined using the populations of the locations as weights. Finally, the CPI is computed so as to express current prices as a percentage of average prices prevailing during the period 1957-59. For example, the CPI for July 1969 was 128.2. This figure indicates that average prices were 28.2 percent higher than they were in 1957-59.

There is an important difference between point changes in the index and percentage changes in the index. If, for example, the index went from 120 to 130 between October and November, this is a 10 **point** increase (130-120 = 10) and an 8.3 **percent** increase (10/120 = .083).

PRICE CHANGES

In the 31 months between January 1967 and July 1969, the CPI jumped from 114.7 to 128.2 (figure 1). This 13.5 point rise in the CPI represents an 11.8 percent rise in prices over that period. Since the CPI is based on the period 1957-59, about half the total price rise for the last 10 years has occurred since the beginning of 1967.

The CPI may overstate price increases slightly, since no adjustments are made for higher quality goods. Furthermore, the weights used are considered constant at all prices, even though consumers may adjust quantities purchased in response to rising prices.

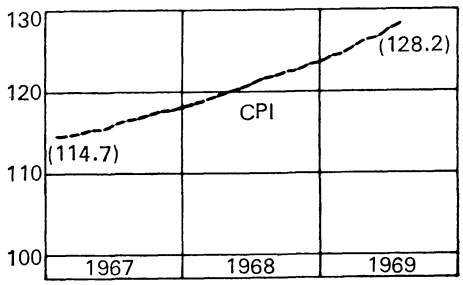

Figure 1. Consumer Price Index, January 1967 to July 1969.

A change in the price of a single item (or group of items) affects the overall CPI in two distinct ways: in the magnitude of the price change and in the importance of the item in the total CPI. For example, suppose that the price of a particular item rose by 50 percent during a given period, and imagine that this item has a weight of .1 in the CPI. Then there would be a corresponding rise of 50 × .1 = 5.0 percent in the CPI due to this item considered alone. Now suppose that the total rise in the CPI was 15 percent for the same period. Since this particular item showed a price rise of 50 percent, it contributed more to inflation than its weight in the index. This example is typical of the discussion that follows. First, inflation will be analyzed in terms of the prices of durable goods, nondurable goods, and services. Then it will be analyzed by looking at the prices of five major categories of items, including housing, transportation, apparel and upkeep, health and recreation, and food.

A final word of caution: if the price index for one item is higher than that for another item, this does not mean that the first is higher priced than the second. It does mean that its price has increased faster than the price of the second since 1957-59.

Durables, Nondurables, and Services

All consumer purchases can be labeled as durables, nondurables, or services. Durables are goods such as mirrors or cars that can be used repeatedly and never or only gradually wear out. Nondurables are goods such as apples or gasoline, which usually are destroyed when first used. Services are actions and activities such as doctors' visits or concerts for which people are willing to pay.

Figure 2 shows the price indexes for durables, nondurables, and services and the overall CPI. The price index for services was higher in January 1967 and increased faster than the CPI during the period shown. The price change for the total CPI was 11.8 percent, while the price

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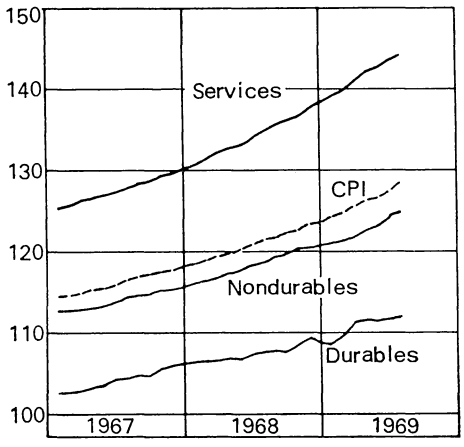

Figure 2. Price indexes for durables, nondurables, and services, January 1967 to July 1969.

change for services was 14.7 percent (see table). Thus, services contributed importantly to inflation, since their prices rose faster than the average. One way to measure the influence that various price groups have on the total index is to compare the importance or weight of the group to the amount of change in the CPI due to price changes in that group. For services the weight is .36 (36 percent), yet they accounted for .45 (45 percent) of the total rise in the CPI during the 31-month period (see table). To summarize this relationship, a ratio can be formed in which the amount of change in the CPI caused by the change in the group's prices is divided by its weight. For services, portion of change divided by weight (P/W) is 1.25 (see table).

This ratio can be used to rank individual items or groups of items as to their effect on the CPI in relation to their weight (see table). If the ratio was larger than 1.0, the item or group tended to pull the CPI up. If the ratio was less than 1.0, the item or group tended to keep the CPI down. A ratio of exactly 1.0 means that the price of the item or group moved at the same pace as the average of all prices in the CPI.

Since services accounted for more than their weight in raising the CPI, durable and nondurable goods accounted for less than their respective weights. That is, prices of services rose faster than prices of durables and nondurables. Nondurable goods (of which about half are foods) had a weight of .47 and were responsible for .42 of the total rise in prices. Hence, P/W for nondurables was .90.

Of the three major categories of items, durables accounted for the least amount of inflation. Durables exhibited a P/W of only .76. However, the rise in the price index of durables, from 102.7 to 111.9 over the 31-month period, represents about 80 percent of the total rise in the average price of durables since 1957-59. This rise is largely attributable to the rise in home ownership costs.

Housing

This group includes houses and rent as well as fuel, mortgage rates, furniture, and such diverse items as lawn mowers, postage stamps, and paper napkins. As figure 3 indicates, these items have contributed only slightly more than their share to inflation. Housing items account for one-third of all spending and contributed .34 of the overall price change, resulting in a P/W ratio of 1.04 (see table). However, all the items within the housing group have not moved together. Home ownership costs, which account for about half of the housing items and include mortgage rates, taxes, and repairs, increased nearly 18 percent and caused over one-fifth of the total inflation. Their relative impact is underscored by the high P/W of 1.52. Home ownership costs are shown separately in figure 3. Most other items included in the housing group showed only a moderate price increase, while some, such as appliances, showed an absolute price decrease.

Transportation

Transportation items as a group tended to restrain overall inflation. They have a weight of .14 in the CPI and accounted for less than their weight (.11) in the CPI change. This resulted in a P/W of .81, which is the lowest of all major groups of goods. One item included in transportation, public transportation, did show a significant price increase amounting to 15.2 percent (figure 3). However, its effect was small, as can be seen from the table.

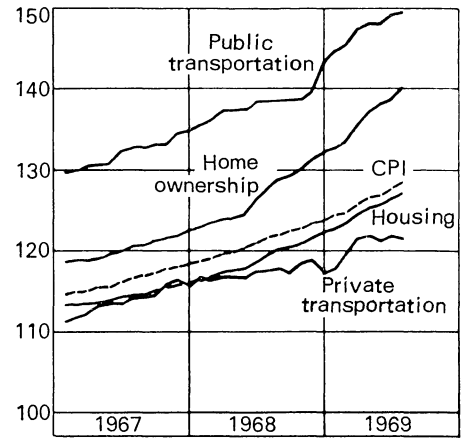

Figure 3. Price indexes for housing and transportation, January 1967 to July 1969.

Private transportation, which accounts for 93 percent of total transportation, had only a 9 percent increase in price, mainly because the price of new cars rose only 4 percent over the period studied.

Apparel and Upkeep

The items making up apparel and upkeep, including clothes, shoes, and jewelry, contributed slightly more than their share to inflation. These items have a

Impact of selected items on the Consumer Price Index (CPI) for the period January 1967-July 1969

Item	Percentage price change	Weight in CPI(W)	Portion of change in CPI caused by given source (P)	P/W*
All items	11.8	1.00	1.00	1.00
Durables	9.0	.17	.13	.76
Nondurables	10.6	.47	.42	.90
Services	14.7	.36	.45	1.25
Housing	12.3	.33	.34	1.04
(Home ownership)†	17.9	.14	.21	1.52
Transportation	9.6	.14	.11	.81
(Private transportation)	9.0	.13	.10	.76
(Public transportation)	15.2	.01	.01	1.27
Apparel and upkeep	13.9	.11	.13	1.18
Health and recreation	12.9	.19	.21	1.09
(Medical care)	17.3	.06	.09	1.47
Food	10.5	.22	.20	.89
(Food at home)	9.5	.18	.14	.81
(Food away from home)	14.0	.04	.05	1.19
(Meats)	16.8	.04	.06	1.42
(Fresh fruits and vegetables)	20.1	.02	.03	1.70

* These ratios were computed using unrounded figures.
† Items in parentheses are included in the major groups.
Source: Derived from *The Consumer Price Index*, monthly issues, January 1967-July 1969.

weight of .11 in the CPI and accounted for .13 of the change in the CPI, giving a P/W of 1.18. All the major items in this group had price increases on the order of 14 percent. Note from figure 4 that these items tend to show seasonal price fluctuations, with the most rapid price rise occurring at the beginning of the spring and winter clothing seasons.

Health and Recreation

The prices of health and recreation items increased 12.9 percent, thereby contributing a little more than their share to inflation, but slightly less than apparel and upkeep items (figure 4). But within this grouping, medical care costs increased 17.3 percent and contributed .09 of the total inflation which, relative to their weight of .06, gave them a P/W of about 1.5. Of all items shown in the table, only home ownership costs and fresh fruit and vegetable prices had a greater influence, relative to their weight, than did medical care costs. Price rises for recreational items alone showed smaller than average price rises and a P/W of less than 1.

Food

Food prices moved up an average of 10.5 percent, compared to the overall rise in the CPI of 11.8 percent during the same period (figure 5). Over 22 percent of all expenditures go for food and related items. Price rises for these items accounted for only 20 percent of the inflation, resulting in a P/W of .89. If restaurant meals are excluded, the price rise for food was only 9.5 percent, giving a P/W of .81. Thus, food at home and transportation were the relatively least influential items fueling the inflation that occurred from January 1967 to July 1969.

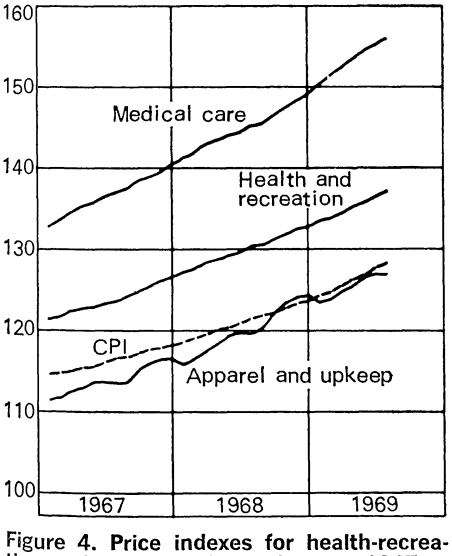

Figure 4. **Price indexes for health-recreation and apparel-upkeep, January 1967 to July 1969.**

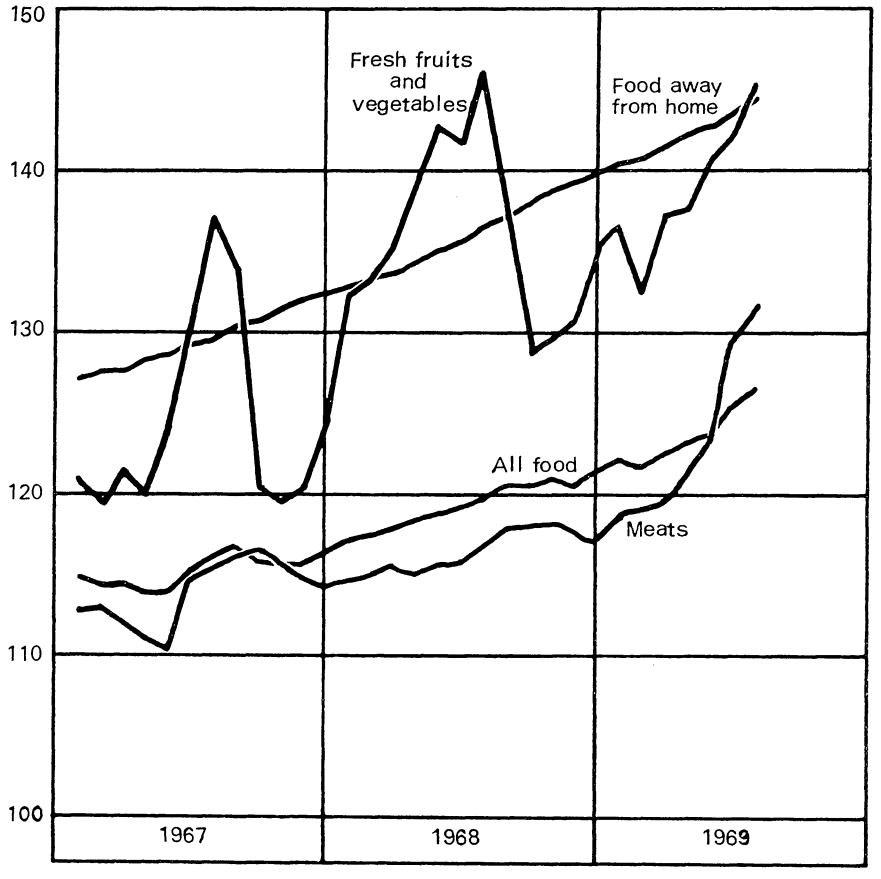

Figure 5. Price indexes for food, January 1967 to July 1969.

Some individual items in the food group did show large increases in price, notably meats and fresh fruits and vegetables (figure 5). Meat prices advanced an average of 16.8 percent. These higher prices accounted for .06 of the total inflation which, relative to their weight of .04, gave meats a P/W of 1.42. Price increases for meat in recent months have been extremely rapid.

Fresh fruit and vegetable prices went up 20.1 percent, giving the largest P/W (1.70) in the table. However, as can be seen from figure 5, these prices are quite seasonal. Since the 31-month period began in a month when prices were relatively low (January) and ended in a month when they were relatively high (July), the price rise is overstated. If seasonally adjusted prices are used, fresh fruit and vegetable prices show a price increase of less than 4 percent and a P/W of only .32.

Since the typical housewife buys food more regularly than almost any other item, she is constantly aware of price changes in this sector. Since meat purchases comprise a large part of each grocery bill, rapid price increases for meat may overshadow and obscure the comparatively moderate rate of price increase elsewhere in the supermarket.

CONCLUSIONS

A look at the nature of consumer price increases during a recent 31-month period revealed several important points:

- Much of the inflationary price increase is due to increases in the prices of services purchased by consumers. Medical care has been a major factor.
- Costs of home ownership are rising rapidly and have been a major source of inflation.
- Prices of durable goods, especially appliances, have not increased much and have helped to hold the CPI down.
- Food prices have increased moderately in total, but recent increases in meat prices have been rapid and are one of the most visible signs of the overall inflationary trend. ■

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IN PERSPECTIVE

Recent Agricultural Economics Publications

K. E. Egertson,
Assistant Professor and Extension Economist

In the May 1969 issue of *Minnesota Agricultural Economist*, a classification of the various publications available from the Department of Agricultural Economics was presented. A list of the most recent publications also was provided. The following list updates the May list.

Staff Papers

Future Role of Small Communities: Interregional Comparison. P69-9. W. R. Maki.

The Evolving Regional Community. P69-10. W. R. Maki.

Urban Regional Cooperation. P69-11. W. R. Maki.

Integrated Regional Information Systems. P69-12. W. R. Maki.

Resource Endowments and Technological Change in Agriculture: U.S. and Japan Experiences in International Perspective. P69-13. Y. Hayami.

Market Structure Analysis and Research. P69-14. D. C. Dahl.

Agricultural Marketing Policy. P69-15. D. C. Dahl.

Economic Theory: Orthodoxy and John R. Commons. P69-16. D. C. Dahl.

Agricultural Economics. P69-17. V. W. Ruttan.

Regionalization in the Upper Midwest — The ABC's of an Incremental Evolution. P69-18. J. S. Hoyt, Jr.

Factor Prices and Technical Change in Agricultural Development: The United States and Japan, 1880-1960. P69-19. Y. Hayami, V. W. Ruttan.

Risk, Uncertainty, and Futures Trading: Implications for Hedging Decisions of Beef Cattle Feeders. P69-20. W. A. Elder.

The Rationale for Minnesota Regionalization. P69-21. J. S. Hoyt, Jr.

Using Local Comprehensive Planning to Control Lakewater Pollution in Seasonal Home Communities. P69-22. R. W. Snyder.

Minnesota's Regional Systems. P69-23. J. S. Hoyt, Jr.

Economic Study Reports

The Fiscal Impact of Employment in the Twin Cities Metropolitan Area. S69-1. J. S. Mann.

Determinants of Tax Revenues and Current Expenditures of Suburban Communities in the Twin Cities Metropolitan Area. S69-2. D. M. Nelson.

Farming Opportunities for Rural Farm Youth in the North Central Region. S69-3. J. M. Stam.

Prospects for U. S. Consumption of Dairy Products. S69-4. M. C. Burk.

The Economics of Alternative Hay Harvesting and Handling Systems for Beef Cow Enterprises. S69-5. L. Maish, C. Cuykendall, P. Hasbargen.

Economic Information Reports

List of Faculty Speeches and Publications in Agricultural Economics. R68-7. C. H. Cuykendall.

Southwest Minnesota Farm Management Association 1968 Annual Report. R69-2. T. R. Nodland.

Southeast Minnesota Farm Management Association 1968 Annual Report. R69-3. T. R. Nodland.

Cost and Returns from Feeding Cattle, 1967-68. R69-4. T. R. Nodland.

What's Ahead for Agriculture in 1969-70? R69-5. K. E. Egertson et al.

List of Faculty Publications, July 1968-July 1969. R69-6. C. H. Cuykendall.

1968 Farm Business Summary by Type of Farming for Northern Minnesota. R69-7. T. Nodland and E. Persons.

The Place of Beef Cow Herds on Southern Minnesota Farms. R69-8. T. Nodland, S. Engene, H. Walch.

Experiment Station Publications

Study of Prices for Milk in Manufacturing Uses. Station Bulletin 497. J. W. Hammond, T. F. Graf.

Extension Service Publications

Understanding the Water Quality Controversy in Minnesota. Extension Bulletin 359. J. J. Waelti.

Professional Journal Reprints

"Rural Development in Morocco: Operation Labour," *Economic Development and Cultural Change.* Unnumbered. H. J. Van Wersch.

Direct requests for departmental publications to: Department of Agricultural Economics, 212 Haecker Hall, University of Minnesota, St. Paul, Minnesota 55101. Send requests for extension and experiment station publications to: Bulletin Room, 3 Coffey Hall, University of Minnesota, St. Paul, Minnesota 55101. ■

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