many was the only country to make a transition from financing by employers to general revenue financing in an already existing program. France, with programs predating World War II, has retained employer financing.

An examination of patterns in the five countries studied indicates that long-range trends in birth rates have not been affected by either the introduction of children's allowances or increases in allowance rates in existing programs.

# Notes and Brief Reports

## Effect of Changing Technology on Hospital Costs*

For many years the hospital industry has been introducing new and improved medical services. The introduction of these services has been responsible for a large part of the increase in hospital care costs. Such services arise largely from the availability of the new medical technology, procedures, and techniques. A simple example is the use of new and expensive drugs and medications. A more dramatic example is the increased use of open-heart surgery, which can require specially equipped operating rooms and additional supplies and materials, as well as skilled personnel for the surgical team. The result is growth in capital expenditures, operating expenses, and wage payments.

Additional services—and subsequent increased expenses—may also involve services not directly related to medical care such as construction of new parking lots, renovation of waiting rooms, improvement in the quality of food served, and the installation of televisions and telephones.

The labor and capital involved in providing new and improved services, referred to by economists as additional inputs (labor and nonlabor), represent added costs to the hospitals This note studies the rise in hospital cost by isolating those increases attributable to the additional inputs from the increases necessary solely to maintain a constant level of hospital services. The latter increases are the raises in hospital employee wages and the growth in prices paid for other goods and services.

Because the data on inputs (and on prices and wages) are shown on the basis of cost per patient day, they would not include costs attributable to

additional hospital bed construction and utilization. The capital costs of new hospital beds are, however, usually higher than those of the older beds, even after adjustment for increased price levels, because the new beds are accompanied by more elaborate and costly equipment. This difference in the average cost of old and new beds, after price adjustment, represents "new and improved services" and is therefore included in increased inputs. These additional inputs should be included in cost per patient day because they raise the average depreciation per bed (and per patient) that is a part of patient-day costs.

The rise in costs per patient day in short-term community hospitals, by source of increase, is shown in tables 2 and 3 for selected periods from 1951 (the first year for which data were available) through 1970. (Table 1 provides the basic data on hospital costs.) Table 2 indicates the dollar amounts of increase in the various factors and their percentage distribution. In table 3, which gives the percentage increase for the various factors, each factor is shown separately; the total increase for wages and prices and the total for labor and nonlabor inputs represent the weighted average of the component factors.

### INCREASES IN HOSPITAL COSTS

The period 1966–70 was selected to show the increases in hospital costs since the Medicare and Medicaid programs began. It is clear that, during this period, hospitals greatly increased their inputs, with the rise for nonlabor components especially notable. Wages and prices rose at a substantially greater rate than in each of the earlier periods shown. This growth reflects in part the recent inflationary trends and the "catch up" raises granted to hospital employees (whose wage rates have generally lagged behind those prevailing in the economy).

The periods 1955–60 and 1960–65 show more moderate increases in inputs, although the rate of

**TABLE 1.—Selected data on hospital costs, selected years, 1951–70**

| Item | 1951 | 1955 | 1960 | 1966 | 1970 |
|---|---|---|---|---|---|
| Cost per patient day | | | | | |
|   Total amount | $16 77 | $23 12 | $32 23 | $48 15 | $81 01 |
|   Labor | 9 65 | 14 26 | 20 08 | 29 41 | 47 30 |
|   Nonlabor | 7 12 | 8 86 | 12 15 | 18 74 | 33 71 |
|   Nonlabor (in 1967 dollars) | 9 15 | 11 05 | 13 70 | 19 28 | 28 99 |
| Percentage distribution | | | | | |
|   Labor | 57 5 | 61 7 | 62 3 | 61 1 | 58 4 |
|   Nonlabor | 42 5 | 38 3 | 37 7 | 38 9 | 41 6 |
| Hospital personnel | | | | | |
|   Number, per patient day | 1 71 | 2 02 | 2 26 | 2 61 | 2 92 |
|   Average annual earnings | $2,054 | $2,563 | $3,240 | $4,097 | $5,921 |
| Consumer price index (BLS), all items (1967=100) | 77 8 | 80 2 | 88 7 | 97 2 | 116 3 |

short-term (community) hospitals. The methodology used here for estimating the changes in the inputs is based largely on the work of Martin S. Feldstein of Harvard University[1] and that of the National Advisory Commission on Health Manpower.[2]

## Labor Costs

The increases in the components of labor costs—wage rates and labor input—were estimated separately, on the basis of available data. The percentage increase in wage rates was estimated by calculating the increase in average annual earnings of hospital employees over the various periods and converting this increase into an average yearly rate. The data for average annual earnings may be affected by a change in the average skill level of employees (reflecting a change in skill mix of hospital employment), but it was not possible to adjust for this factor.

The percentage rise in labor input was estimated by calculating the percentage increase in the number of hospital employees per patient day during the period (again, converted to an average annual rate of increase). That is, the increase in labor input was measured directly in physical terms by calculating the increase in labor per patient day. Part of this increase in the number of employees may, however, reflect the hiring of the additional employees needed because of reductions in the number of hours in the workweek.

input (especially nonlabor) accelerated in the later period. In both periods, prices and wages also rose at a more moderate rate than in 1966–70.

For 1951–55, the level of inputs was higher than that of the 1955–60 period but was lower than in the most recent period. The years from 1951 to 1955 exhibited unusual price stability, though wage rates moved up substantially.

In summary, the data indicate that since the mid-1950's the level of inputs has been rising—with the rise in nonlabor input especially significant. This growth was especially notable after the start of the Medicare program.

For the entire period from 1951 to 1970 the increase in inputs has accounted for about half the total rise in hospital costs. In the various periods shown, the proportion has fluctuated from 45 percent to 55 percent.

## ESTIMATING METHODS

The data in table 1 were used in preparing these estimates. Unless otherwise noted, they are from the annual survey of hospitals of the American Hospital Association and refer to non-Federal

[1] Martin S. Feldstein, *The Rising Cost of Hospital Care*, National Center for Health Services Research and Development, Information Resources Press, 1971.

[2] *Report of the National Advisory Commission on Health Manpower*, The Commission, vol. I, 1967.

**TABLE 2.—Cost per patient day in short-term community hospitals: Average annual increase, selected periods, 1951–70**

| Source of increase | Increase in cost in specified period | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Amount | | | | | Percentage distribution | | | | |
| | 1951 to 1970 | 1951 to 1955 | 1955 to 1960 | 1960 to 1966 | 1966 to 1970 | 1951 to 1970 | 1951 to 1955 | 1955 to 1960 | 1960 to 1966 | 1966 to 1970 |
| Average annual increase | $3 38 | $1 59 | $1 82 | $2 66 | $8 21 | 100 0 | 100 0 | 100 0 | 100 0 | 100 0 |
| In wages and prices | 1 67 | 71 | 1 00 | 1 19 | 4 62 | 49 4 | 44 7 | 54 9 | 44 7 | 56 3 |
|   Wage rates | 1 32 | 65 | 80 | .97 | 3 48 | 39 1 | 40 9 | 44 0 | 36 4 | 42 4 |
|   Price levels | 35 | 06 | 20 | .22 | 1.14 | 10 4 | 3 8 | 11.0 | 8 3 | 13 9 |
| In inputs | 1 71 | 88 | .82 | 1.47 | 3 59 | 50 6 | 55 3 | 45 1 | 55 3 | 43 7 |
|   Labor | 66 | 50 | 36 | .59 | .99 | 19 5 | 31 4 | 19 8 | 22 2 | 12 1 |
|   Nonlabor | 1 05 | 38 | 46 | .88 | 2.60 | 31 1 | 23 9 | 25 3 | 33.1 | 31.7 |

| Source of increase | Percentage increase from— | | | | |
|---|---|---|---|---|---|
| | 1951 to 1970 | 1951 to 1955 | 1955 to 1960 | 1960 to 1966 | 1966 to 1970 |
| Average annual increase.. | 8 6 | 8 4 | 6 9 | 6 9 | 13 9 |
| In wages and prices ¹ | 4 2 | 3 7 | 3 8 | 3 1 | 7 8 |
| Wage rates | 5 8 | 5 8 | 4 9 | 4 1 | 9 8 |
| Price levels | 2 1 | 8 | 2 0 | 1 5 | 4 8 |
| In inputs ¹ | 4 4 | 4 7 | 3 1 | 3 8 | 6 1 |
| Labor | 2 9 | 4 4 | 2 2 | 2 5 | 2 8 |
| Nonlabor | 6 4 | 4 8 | 4 5 | 6 0 | 11 0 |

¹ Based on the weighted average of the two components.

## Nonlabor Costs

The increase in nonlabor input cannot be measured directly in physical terms. Nonlabor input is estimated by taking the total increase in nonlabor costs during the period and deflating it by a price index. Under this procedure, the increase in the price index represents the increase resulting from prices and the residual (nonlabor cost in constant dollars) represents the nonlabor input. (The rates of increase were converted to average annual rates.) No precise deflator for hospital expenses was available, and the Consumer Price Index of the Bureau of Labor Statistics was used as a general index of price trends affecting hospitals. The data for nonlabor prices and input are therefore only rough approximations.

As explained previously, the total increases for wages and prices and the total for labor and nonlabor inputs were estimated by combining the separate components appropriately weighted by hospital payroll and nonpayroll expenses. For this purpose, the average weight for each selected period was used.

## Interaction Factor

Part of the increase in per diem hospital cost is attributable to the additional costs resulting from the increase in wage rates applicable to the additional labor inputs, and from the price rises applicable to additional nonlabor inputs. Thus, the wage and price increases and the additional inputs have a compounding effect that cannot be directly attributed to either. This effect is defined as the interaction factor. Unless the inter-action factor were taken into account, the estimates of increase for the combined price, wage, and input factors would be less than the total increase in per diem hospital costs. For the average annual data presented here, however, the interaction is relatively small, and it (together with any estimating error) has been proportionately allocated to and included in the estimates.

# Social Security Abroad

## Higher Old–Age Pensions in France*

New social security legislation brought into force by the French Government on January 1, 1972, extensively revises pension schedules for old-age and disability retirement and increases benefits for long-term workers by extending the number of years of service that can be credited in computing coverage under the pension formula. These measures, which in the next 3 years will benefit an estimated 1.2 million older persons, have been described by the French Minister of Public Health and Social Security as "the most important amendments to the social security law since its enactment in 1946." The legislation applies to 12.3 million workers in private industry and commerce covered under the *régime général.*

### BACKGROUND

The adequacy of old-age and disability pensions has been a question under study in France for some time. The Laroque Report,[1] a 1960 Government-sponsored inquiry into the problems of the aged, acknowledged the inadequacy of the existing pension levels and the difficulties confronting retired pensioners. More recent studies[2] show that in 1970 about one-third of the population over age 64 were dependent on a total income of 325 francs per month.[3] The report of the Commission on Social Benefits for the Sixth Plan,

* Prepared by Robert W. Weise, International Staff.
[1] Pierre Laroque, *Politique de la vieillesse,* Documentation francaise, Paris, 1962.
[2] See Jean-Jacques Dupeyroux, *Sécurité Sociale,* 4th ed., Précis Dalloz, Paris, 1971, pages 395–400.
[3] One French franc equals about 20 U.S. cents.