

# The Rising Cost of Medical Care and Its Effect on Inflation

*By Paula Hildebrandt and Eric A. Thomas*

Prices in a few sectors of the economy continue to climb at near double-digit rates despite some progress lately in reducing the overall inflation rate. Of concern is that the persistence of relatively high inflation in these sectors could dampen further progress toward price stability. One sector receiving particular attention recently has been the medical-care industry. Medical-care prices have risen faster than the overall price level since the early 1980s. Last year, for example, medical-care prices rose nearly twice as fast as the overall consumer price index (CPI).

Does the relatively fast pace of inflation in medical care pose a problem for policymakers? This article argues that high inflation in medical care makes achieving price stability more difficult, but that its effect on overall inflation is not large enough to inhibit policymakers from pursuing price stability as a goal. The first section of the article describes recent trends in the medical-care component of the CPI and shows that medical-care prices have a relatively small weight in the overall CPI. The second section argues that medical-care prices ultimately contribute more to overall CPI inflation than would be indicated by their small weight but, nevertheless, are not so large as to impede the attainment of price stability.

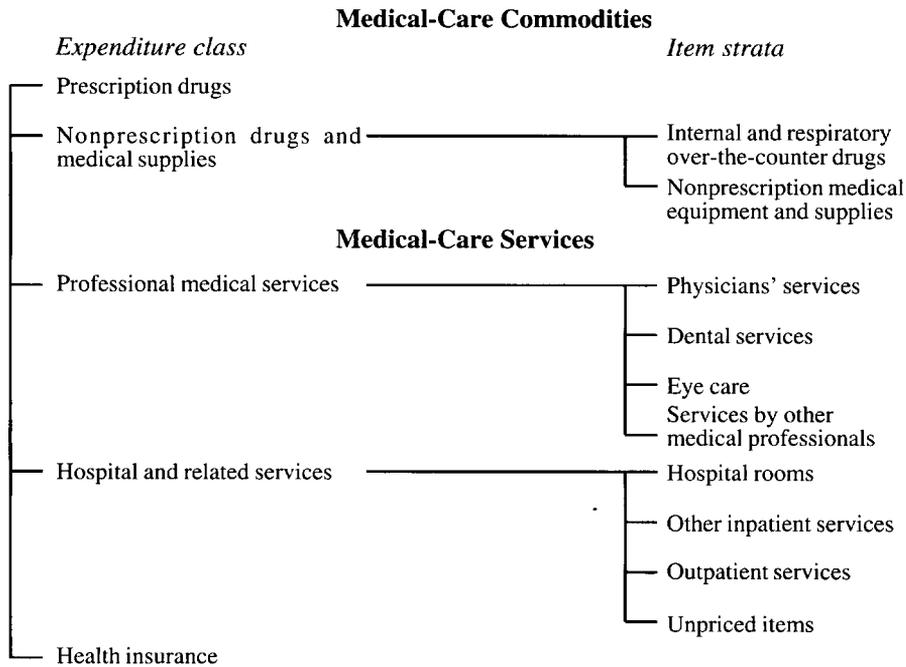
## ***The Medical-Care Component of the CPI***

Higher inflation in the medical-care component of the CPI than in the total CPI potentially poses a problem for monetary policymakers. If medical-price inflation has a big effect on overall inflation, policymakers may find reducing overall inflation difficult. This section examines the importance of medical-care prices in the overall CPI. After describing how the CPI is calculated, the section

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Figure 1  
**Medical-Care Component of the CPI**



Source: Bureau of Labor Statistics.

documents the rapid increase in medical-care prices relative to total CPI inflation. The section then shows that, despite the relatively fast rate of increase of medical-care prices, the medical-care component of the CPI remains relatively small.

### Overview of the CPI

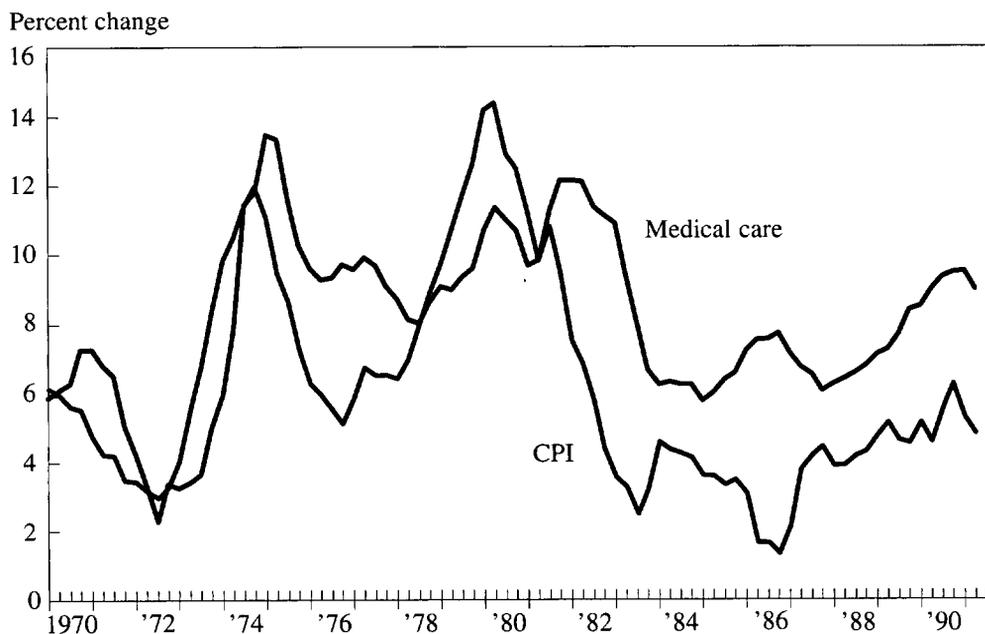
The CPI is compiled by the Bureau of Labor Statistics (BLS) and measures the price of a fixed market basket of goods and services at a point in time. Items in the basket include goods and services that consumers buy in day-to-day living, including everything from video games and breakfast cereals to prescription drugs and automobiles.

The BLS calculates two separate CPI

indexes—the CPI-U and the CPI-W. The CPI-U represents the buying habits of all urban consumers, who account for 80 percent of the population. The CPI-W represents the buying habits of urban wage and clerical workers, who account for 32 percent of the population.<sup>1</sup> This article focuses on the CPI-U because the all-urban index represents a greater portion of the entire population.

The goods and services that make up the CPI's market basket are selected based on the Consumer Expenditure Survey. This survey is compiled yearly by the Bureau of the Census and yields detailed spending information on a sample of 10,200 families and individuals.<sup>2</sup> The survey includes only "out-of-pocket" expenses, omitting expenses not paid directly by consumers, such as employer-financed or government-

Chart 1  
**Consumer and Medical-Care Price Indexes**



Note: Variables are expressed as 12-month rates of change.

Source: Bureau of Labor Statistics.

financed health insurance. Roughly every ten years, the BLS uses information from the survey to revise the market basket and recalculate the weight of each good or service in the overall CPI. The *weight* of an item in the CPI—which remains fixed between revisions—is the expenditure share of the item in the market basket.

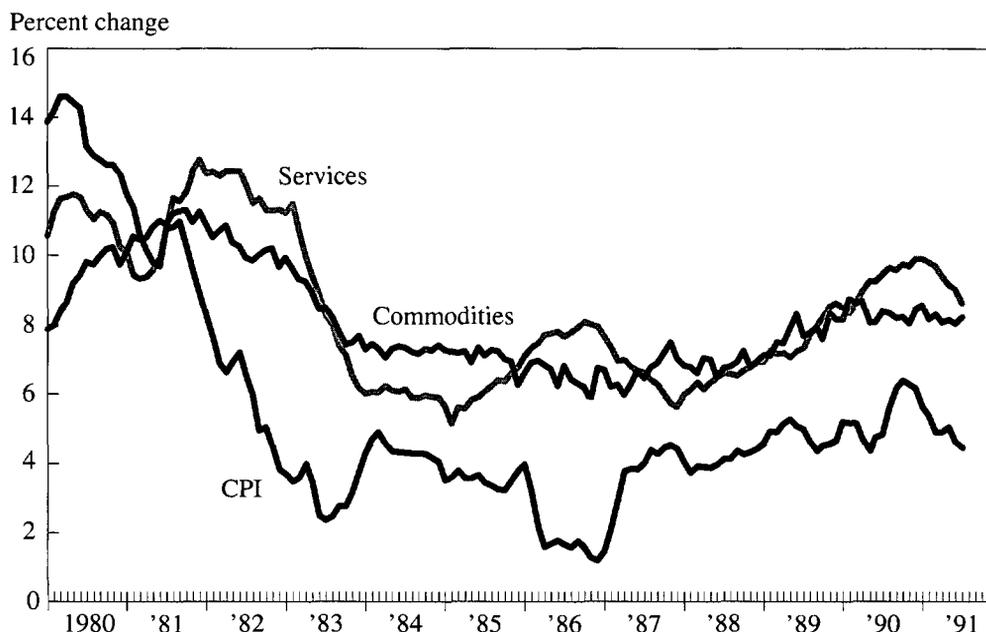
The CPI's market basket consists of seven major components—food and beverages, housing, apparel and upkeep, transportation, medical care, entertainment, and other goods and services.<sup>3</sup> Each component is divided into two or more *expenditure classes*, consisting of closely related items. For example, the medical-care component has five expenditure classes—prescription drugs, nonprescription drugs and medical supplies, professional medical ser-

vices, hospital and related services, and health insurance (Figure 1). Expenditure classes are further divided into groups of like items, called *item strata*. In the professional medical-service expenditure class, for example, item strata include physicians' services, dental services, eye care, and services by other medical professionals.

To determine the prices of the specific goods and services in the market basket, BLS field representatives gather information each month from selected retail outlets in urban areas across the United States. The field reps record the prices of goods and services, which have specific, well-defined characteristics. If the characteristics of a good or service change, the BLS attempts to determine how the new characteristics affect the value of the product so it

Chart 2

## Price Indexes of Medical-Care Commodities and Services



Note: Variables are expressed as 12-month rates of change.

Source: Bureau of Labor Statistics.

can adjust the price accordingly.<sup>4</sup> New characteristics that measurably improve the quality of a good, for example, lead the BLS to adjust the price downward. Once the field reps have completed recording prices and noting changes in characteristics, the BLS compiles the data and calculates the CPI.

### **Recent price trends in medical care**

In contrast to the experience of the 1970s, medical-care prices since 1981 have consistently risen faster than the overall CPI (Chart 1). Since 1981, prices in the medical-care component have climbed an average 8.1 percent per year, while the overall CPI has climbed just 4.7 percent per year. Medical-care commodities and medical-care services have shared equally

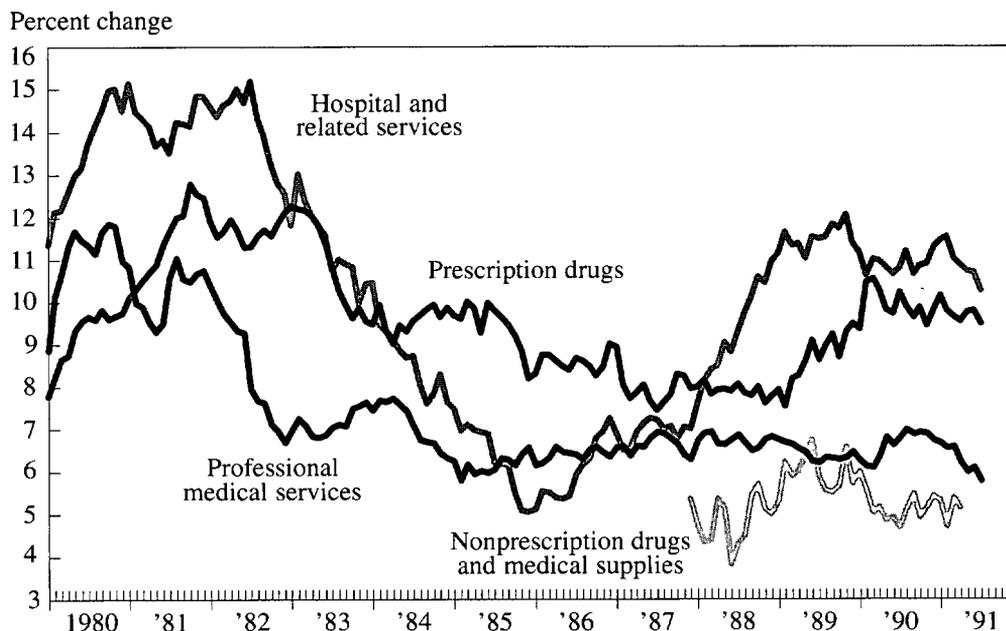
in this price rise (Chart 2).

Somewhat more divergent behavior is apparent among the expenditure classes of the medical-care component (Chart 3). Prices for prescription drugs and hospital services have generally risen faster than prices for non-prescription drugs and professional medical services. Thus, the main force behind inflation in medical-care services has been price increases for hospital services.<sup>5</sup> The main force behind inflation in medical-care commodities has been price increases for prescription drugs.

Analysts cite several factors to explain surging prices in medical care. Two of the main factors are the rapid introduction of expensive new technologies and the aging of the population. Another factor contributing to the problem is the fear of malpractice suits (Aaron). While

Chart 3

### Price Indexes of Medical-Care Classes



Note: Variables are expressed as 12-month rates of change. Data on the health insurance expenditure class are not published. Also, data on the nonprescription drugs and medical supplies expenditures class were not published before December 1986.

Source: Bureau of Labor Statistics.

such explanations for high medical-care inflation have been hotly debated, this debate is beyond the scope of this article.

#### Relative importance in the CPI

Medical-care prices have clearly risen sharply in recent years. However, for medical-care inflation to boost overall inflation significantly, not only must medical-care inflation be relatively high, but medical-care goods and services must also represent an important share of the CPI's market basket. As the data show, however, the share of medical care in the market basket has been relatively small.

*The concept of relative importance.* In constructing the CPI, the BLS calculates the *relative importance* of each item in the market

basket. The relative importance of an item is its fixed *weight* in the market basket—based on expenditure survey information—times its price index divided by the total consumer price index. For example, suppose medical care's weight in the CPI was 5 percent. In addition, suppose that the price index for the medical-care component was 150, while the total consumer price index was 100. Then, the relative importance of medical care would be 7.5 percent (5 percent times 150/100 equals 7.5 percent). Despite the relatively high level of medical-care prices, the relative importance of medical care would be low because of the small weight of medical care in the CPI.

As relative prices change, an item's relative importance changes even though its expenditure weight remains fixed. The relative

Table 1

**Relative importance of the components of the CPI**

	(CPI-U) December 1986	(CPI-U) December 1990
Medical care	5.420	6.387
<i>Medical-care commodities</i>	1.083	1.203
Prescription drugs	.699	.812
Nonprescription drugs and medical supplies	.384	.391
Internal and respiratory over-the-counter drugs	.248	.256
Nonprescription medical equipment and supplies	.136	.135
<i>Medical-care services</i>	4.337	5.184
Professional medical services	2.815	3.119
Physicians' services	1.469	1.688
Dental services	.854	.928
Eye care	.334	.337
Services by other medical professionals	.158	.166
Hospital and related services	1.334	1.842
Hospital rooms	.531	.725
Other inpatient services	.492	.708
Outpatient services	.307	.404
Unpriced items	.004	.005
Health insurance	.188	.223
Food and beverages	17.824	17.706
Housing	42.947	41.356
Apparel and upkeep	6.335	6.073
Transportation	17.217	17.796
Entertainment	4.403	4.316
Other goods and services	5.855	6.367
All items	100.0	100.0

Note: All numbers are percentages. The relative importance of each item is based on the expenditure weights from the 1982-84 Consumer Expenditure Survey.

Source: Bureau of Labor Statistics.

importance of an item increases if its price rises faster than the total CPI. The relative importance of an item decreases if its price rises slower than the total CPI. For example, if medical-care prices doubled while the total CPI remained unchanged, the relative importance of medical care in the CPI would also double.<sup>6</sup>

*Recent developments in medical care's relative importance.* The relative importance of the medical-care component has steadily increased in recent years because medical-care prices have risen faster than the overall CPI. However, the relative importance of medical care remains relatively small. In 1990, the relative importance of medical care in the CPI was only 6.4 percent (Table 1).<sup>7</sup> Most of medical care's relative importance was concentrated in the service sector. In December 1990, medical-care services had a relative importance of 5.2 percent, while medical-care commodities had a relative importance of 1.2 percent.

Because of its small weight in the CPI, the medical-care component has a smaller relative importance than most of the other six major components of the CPI. Only *apparel and upkeep* and *entertainment* are less important than medical care, while *other goods and services* have roughly the same relative importance as medical care. In contrast, the relative importance of *housing* in the CPI is more than six times the relative importance of the medical-care component. Thus, a price increase in the medical-care component would increase the CPI much less than a price increase in most of the other major components of the CPI.

### ***Implications for Achieving Price Stability***

Does the low relative importance of medical care imply that medical-care inflation will not be an obstacle to further progress against overall inflation? This section examines the

relationship between medical-care inflation and overall CPI inflation. The section first examines direct effects. That is, does medical-care inflation make the goal of price stability more difficult to achieve when medical-care prices are assumed not to affect prices of nonmedical goods and services? The section then examines indirect effects. That is, does medical-care inflation cause prices of nonmedical goods and services to rise, thereby making price stability harder to achieve?

#### ***Direct effect***

The direct effect of medical-care inflation on overall inflation is the amount that price changes in the medical-care component contribute to the CPI, ignoring the influence of medical-care prices on prices of other goods and services.<sup>8</sup> A simple simulation illustrates the direct effect in terms of the goal of achieving price stability.

For simplicity, the simulation makes several assumptions. First, it assumes the Federal Reserve conducts monetary policy so as to reduce CPI inflation by one percentage point a year, starting with an inflation rate of 5 percent in the first year and achieving price stability in the fifth year.<sup>9</sup> Second, price stability is assumed to correspond to 1-percent inflation in the CPI to account for measurement biases that cause CPI inflation to be overstated.<sup>10</sup> Third, based on a review of the literature, the medical-care component of the CPI is assumed to be no more or less subject to these biases than the CPI as a whole (see appendix).

Finally, the simulation assumes that inflation of medical-care prices remains three percentage points above the overall CPI inflation rate throughout the simulation horizon. This assumption is consistent with the visual evidence from Chart 1. For a large part of the 1980s, medical-care inflation rose and fell with

Table 2

**Simulated disinflation with high medical-care inflation**

	Assumptions		Implication for CPI inflation less medical care
	CPI inflation	Medical-care inflation	
First year	5	8	4.8
Second year	4	7	3.8
Third year	3	6	2.8
Fourth year	2	5	1.8
Fifth year	1	4	.8

Note: Implied CPI inflation less medical care is computed from the assumptions using two identities (see footnote 12). All numbers are percentage increases from the previous year.

Source: Authors' calculations, based on the stated assumptions, and Bureau of Labor Statistics.

overall CPI inflation but remained roughly three percentage points above overall inflation. Thus, the simulation assumes that medical-care inflation falls in response to a disinflationary monetary policy but remains relatively high.<sup>11</sup>

Given these assumptions, two implications of rising medical-care prices for achieving price stability are clear. First, with medical-care inflation higher than overall inflation, nonmedical inflation must be lower than overall inflation. Second, once overall price stability has been achieved, persistent inflation in the medical-care component will require steady deflation (relative to the 1-percent "price stability" inflation rate) in the nonmedical component.

How much will prices in the nonmedical component have to "fall" to achieve overall price stability? The simulation shows only a modest direct effect of relatively high medical-care inflation on policymakers' efforts to achieve price stability. The first two columns of Table 2 show the assumed downward paths of overall CPI and medical-care inflation. Given

these assumed paths, the direct effect of the medical-care component can be seen. The final column shows that nonmedical inflation will have to fall roughly a quarter point below 1 percent to achieve price stability in the fifth year.<sup>12</sup> Thus, achieving overall price stability in the presence of persistent inflation in the medical-care sector does not imply a sharp deflation in the prices of nonmedical goods and services. But this is only the direct effect.

**Indirect effect**

The simple simulation ignores the *indirect* effect of rising medical-care prices on the CPI by assuming that medical-care prices do not influence the prices of other goods and services. Yet, the indirect impact of surging medical-care prices on the prices of nonmedical goods and services may be an important obstacle to lowering overall inflation. This obstacle arises primarily from the medical costs employers pay and pass on to consumers in the form of higher

prices.<sup>13</sup> Measuring these indirect effects is necessary to determine the “true” effect of rising medical-care prices on overall consumer inflation. Achieving price stability in the face of soaring medical-care prices may prove more difficult than implied by the simple simulation.

The potential importance of the indirect effect is evident in rising premiums for health insurance. In recent years rising health insurance premiums have significantly raised the costs to businesses that pay part or all of their employees’ health insurance. These businesses are likely to pass on at least part of these rising costs to consumers in the form of higher prices for their products. These rising prices will push the CPI higher but will not be reflected solely as price increases in the medical-care component. Thus, by ignoring the indirect effect of rising health insurance premiums on consumer inflation, analysts claim that medical care’s contribution to consumer inflation is understated.<sup>14</sup>

Recent data on employee medical-care compensation, however, suggest that the indirect effect of medical-care inflation on overall inflation is modest. From March 1987 to March 1991, for example, average total compensation for workers as measured by the Employment Cost Index (ECI) was \$14.37 per hour. Of this amount, \$1.29 represented employer-paid medical-care costs, including payments for medical insurance premiums, workmen’s compensation, and Medicare.<sup>15</sup> Thus, medical-care costs were just under 9 percent of total compensation.

Despite medical care’s small share of total compensation, the rapid increase in medical-care costs relative to other types of employee compensation has measurably raised the overall

cost of business. For example, from March 1988 to March 1991, employee medical costs rose an average 9 percent annually, while total compensation costs—wages and salaries plus medical and nonmedical benefits—rose 3.5 percent. If medical costs had grown at the same rate as other employer costs over the same period, total compensation would have grown only 3 percent. Thus, rising medical-care prices added 0.5 percentage point to the inflation rate of employee compensation. If only part of this indirect effect is passed on to consumers in the form of higher prices, the indirect effect will have clearly made achieving price stability more difficult. The amount does not seem large enough, however, to deter policymakers from pursuing price stability as a goal.

### *Conclusion*

Soaring medical-care prices are a concern to policymakers because they could impede further progress against inflation. In recent years medical-care prices have increased nearly twice as fast as the total CPI. But because the medical-care component is such a small share of the total CPI, higher medical-care prices have had only a modest direct effect on total CPI inflation.

Medical-care prices also have an indirect effect on inflation through their effect on business costs. Although this indirect effect is potentially more important than the direct effect, it too seems to be relatively small. Thus, although soaring medical-care prices will clearly make achieving disinflation more difficult, they should not inhibit policymakers from pursuing price stability as a goal.

## Appendix

### Measurement Biases in the CPI

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The CPI potentially measures inflation inaccurately because of problems associated with quality changes and the fixed market basket. Some critics argue that medical-care prices are particularly susceptible to these measurement problems. However, recent studies have found no clear evidence that the medical-care component is any more biased than the total CPI. As long as both indexes are equally biased, the simulation in the text correctly shows the effect of medical-care inflation on the goal of achieving price stability.

#### *The quality bias*

Because the BLS attempts to isolate the “pure” price change of a particular good or service, price increases that result from quality improvements should be excluded. To accurately measure price changes, the BLS must measure the same good, with a specific set of characteristics, each month. Quality improvements may often lead to higher prices. But these price increases should not be included in the CPI, because quality improvements essentially create a “new” good. To compare the “same” good over time, price increases caused by improved quality must be factored out.

Sometimes, however, adjusting for quality improvements within the medical-care component has proven difficult. It is hard to measure accurately the quantitative value added to a product by quality improvements. Suppose, for example, that a particular medical treatment has been made less painful to patients but that the improved treatment now costs more. How can

the value of less pain be determined? It is difficult to measure changes in the quality of human life caused by better medical treatment. Consequently, some measured price increases in the CPI may actually reflect quality increases, causing the CPI to overstate medical-care inflation (Koretz).<sup>16</sup>

#### *The substitution bias*

The CPI may also be overstated because it ignores the *substitution* effects of price changes. When determining inflation, the BLS measures price changes but assumes the quantities of the goods and services in the market basket remain fixed. Yet, assuming that consumers purchase the same amounts of each good or service, regardless of the change in its price, is unrealistic. When a particular good’s price increases, consumers often switch to a comparable item that costs less. By neglecting the substitution between items, the CPI overstates the welfare-reducing effects of a particular price increase. For example, a sharp increase in the price of a name brand aspirin may lead consumers to a cheaper generic brand of aspirin. The reduction in quantity of the higher-priced aspirin offsets some of the impact of its higher price. Over the long run, the substitution effect is likely to increase. Consequently, the BLS periodically revises the market basket to reflect changing consumer spending patterns. However, between revisions some observers charge that the CPI is increasingly inaccurate because of these substitution effects (Madigan).<sup>17</sup>

## Estimates of the total bias

Despite all that has been written on the difficulties of accurately measuring medical-care inflation, the medical-care component is not likely to be any more upward biased than the total CPI. Some analysts argue that quality improvements in medical care are just as likely to be picked up by BLS field representatives as

quality improvements in other goods and services (Rappoport). Moreover, Triplett argues that "existing research ... is insufficient to indicate whether the medical-care components are upward biased." In addition, studies show that the substitution bias within the medical-care component as well as in the overall CPI is negligible (Braithwait).<sup>18</sup>

## Endnotes

<sup>1</sup> Neither index includes the spending habits of consumers in the Armed Forces.

<sup>2</sup> The Consumer Expenditure Survey consists of two surveys: the diary survey for routine purchases and the interview survey for major purchases (BLS 1987).

<sup>3</sup> The other goods and services component includes such items as tobacco, cosmetics, college tuition, and legal service fees.

<sup>4</sup> The BLS uses four methods—directly comparable, direct quality adjustment, linking with overlap price, and linking without an overlap price (BLS 1988).

<sup>5</sup> In fact, the hospital rooms' item strata increased faster than any other item strata in the total CPI from 1979 to 1989 (Jackman).

<sup>6</sup> More realistically, if medical-care prices doubled while nonmedical prices remained unchanged, the total CPI would rise and the relative importance of medical care would increase less. Nevertheless, the relative importance would still rise.

<sup>7</sup> In 1987, the market basket was recalculated. As a result, the medical-care component's relative importance was revised down more than 20 percent. Most of the downward revision can be explained by the growth of employer-provided health insurance, which is excluded from the CPI. From the 1972-73 period to 1982, the percentage of full-time employees covered by fully employer-paid health plans rose from 71 percent to 73 percent (Ford and Sturm). This led to a sharp reduction in the relative importance of the health-insurance expenditure class and, consequently, the medical-care component.

<sup>8</sup> The direct effect is related to the relative importance of medical care. Specifically, medical care's relative importance reflects the contribution to total CPI inflation of each percentage increase in medical-care prices. One measure of the direct effect is the difference between CPI inflation including and excluding medical care. For example, the

"CPI less medical care" increased 5.17 percent in 1990, while the total CPI increased 5.41 percent. Thus, in 1990 the direct effect of rising medical-care prices was 0.24 percentage point. Another equivalent measure of the direct effect is the difference between medical-care and non-medical inflation weighted by the previous year's relative importance of medical care. For example, the relative importance of medical care in 1989 was 6.2 percent, while the difference between medical-care and nonmedical inflation in 1990 was 3.9 percentage points. Thus, the direct effect was again 0.24 percentage point (3.9 percentage points times 6.2 percent).

<sup>9</sup> The Federal Reserve has not officially set a target date or path for achieving price stability. The path for overall inflation was arbitrarily chosen to simplify the analysis.

<sup>10</sup> Lebow, Roberts, and Stockton estimated that "zero" inflation corresponds to a 0.5 to 1.5 percent CPI inflation rate.

<sup>11</sup> In contrast, Families USA Foundation projects medical-care inflation to increase at an 8.6 percent annual rate through the year 2000. This projection, however, does not make the explicit assumption made in the simulation that the Fed achieves price stability in five years.

<sup>12</sup> Data in the final column are computed from the assumptions, using two identities relating medical-care inflation to total CPI inflation. First,

$$P_T = r_{-1}P_m + (1 - r_{-1})P_{nm},$$

where  $P_T$  represents total CPI inflation,  $r_{-1}$  represents the last year's relative importance of medical care,  $P_m$  represents inflation in medical care, and  $P_{nm}$  represents inflation in the CPI less medical care. And second,

$$r = r_{-1}(P_m + 1) / (P_T + 1).$$

Thus, the first identity gives  $P_{nm}$  for period  $t$ , and the second identity updates the relative importance used in calculating  $P_{nm}$  for period  $t + 1$ . The relative importance of medical care in the first year is assumed to be its actual

level in December 1990. For more information on calculating the relative importance, see McKenzie.

<sup>13</sup> Another indirect effect of medical-care inflation on overall inflation arises through government spending on medical care. The U.S. government is a major purchaser of medical care. The government provides health insurance for its employees, as well as providing health insurance for the elderly and disabled. As medical-care prices increase, the government must ultimately increase taxes to help finance its medical-care outlays. To the extent these taxes take the form of excise or sales taxes, they push up the prices paid by consumers for goods and services. These effects are likely to be small, however, compared with the direct effect of higher medical-care inflation and the indirect effect of medical-care inflation on employee compensation costs.

<sup>14</sup> Some critics charge the low weight of hospital services within the medical-care component is largely responsible for understating medical care's contribution to the CPI (Newhouse). Because expenditures for hospital services are mainly paid for by employer- or government-financed insurance, most hospital expenditures are not reflected in the CPI. But prices for hospital services are rising fastest among the five expenditure classes of the medical-care component (Chart 3). Thus, the indirect effect of hospital services inflation on the total CPI is likely to be large.

<sup>15</sup> This is based on BLS estimates that Medicare repre-

sents approximately 19 percent of the social security component in the employment cost index.

<sup>16</sup> Although quality is difficult to measure, the BLS is able to factor out some quality changes. For example, the BLS separates quality from price changes in the medical-care component when a price increase results from an already-priced service or good being added to the original service or good. Suppose, for example, a standard visit to a throat specialist cost \$50 one month and \$65 the next. If a \$15 throat culture was added to the standard visit the second month, the \$15 "price increase" of the standard visit actually represents a quality change. Consequently, this \$15 price increase will not be incorporated in the medical-care component. The BLS is also able to factor out some quality changes when measuring health insurance by using an indirect pricing method (Ford and Sturm).

<sup>17</sup> Because of the problems associated with using a fixed market basket in the CPI, some analysts suggest using the PCE deflator as a measure of medical-care inflation. The PCE deflator does adjust for changes in consumer buying habits. However, the PCE deflator covers only medical-care services, excluding medical-care commodities.

<sup>18</sup> In fact, Braithwait found that the substitution bias in the medical-care component may be negative. This implies that neglecting the substitution effect *understates* medical-care inflation.

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