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# A Closer Look at the Employment Cost Index

*By C. Alan Garner*

Labor costs have recently come under scrutiny by policymakers, business economists, and financial market participants. The primary concern has been that tight labor markets might lead to faster compensation growth and, ultimately, to upward pressure on general inflation. The employment cost index (ECI) has received particularly close attention because many analysts consider it to be one of the best measures of labor cost inflation. Other analysts, however, have questioned whether the ECI and other labor cost measures are useful in inflation forecasting. One reason for doubting the ECI's inflation forecasting value is that a moderate upward trend in ECI growth over the last three years has, so far, not been matched by a rise in the general inflation rate.

But economic analysts may have other reasons than inflation forecasting for using the ECI. Detailed information on employment cost trends may help analyze labor market developments and, indirectly, may reflect broader economic trends outside the labor market. In addition, companies may find the ECI useful in

wage setting and other compensation decisions. Given the high profile that the index has sometimes assumed in the business press and financial markets, it is time to take a closer look at the ECI and evaluate its possible uses.

The first section of this article compares the ECI with other labor cost measures and concludes that it is the best measure for many, but not all, purposes. The second section shows that existing studies do not demonstrate a reliable predictive relationship between labor cost inflation and general inflation, suggesting the ECI should be monitored but may not deserve the close attention that it has sometimes received. The third section argues the ECI is quite useful in analyzing broader economic trends, such as the shift in jobs toward the service sector, and in business decisions about employee compensation. The article concludes that the ECI is more useful for labor market analysis and wage setting than for general inflation forecasting.

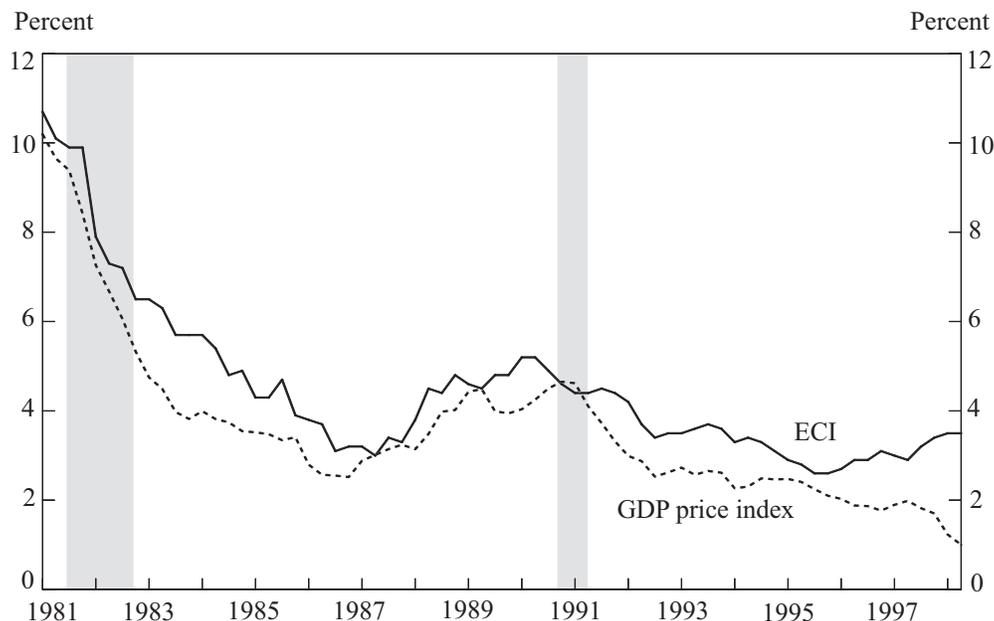
## I. MEASURING EMPLOYMENT COSTS

Many economic analysts believe the employment cost index is the best available measure of U.S. labor costs. For example, Abate referred to the ECI as “the best measure of compensation costs,” and Griggs and Santow Incorporated

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Chart 1  
ECI AND GDP PRICE INDEX



Notes: Percent changes are from four quarters earlier. ECI is not seasonally adjusted. Shaded areas represent recessions.

Sources: Bureau of Labor Statistics, Bureau of Economic Analysis.

described the ECI as “the best measure of wage behavior and benefits being paid, and of the pace at which such employment costs are rising.” In many respects, these sentiments are probably correct, but other potentially useful measures of labor costs exist, including average hourly earnings and unit labor costs. This section describes the ECI and then considers whether this index is always better than the other labor cost measures.

#### *An introduction to the ECI*

The ECI is a quarterly measure of labor compensation per hour worked, including all wages, salaries, and benefit costs paid by employers. Wages and salaries are based on straight-time average hourly earnings, whether or not the employee is normally paid by the hour. Wages

and salaries have historically accounted for a little over 70 percent of total employment costs. Nonwage benefits include paid leave, other supplemental payments, and employer contributions for insurance, retirement and savings plans, and legally required benefits. The methodology for compiling the ECI is described further in the accompanying box.

The inflation rate of the private-sector ECI has roughly paralleled the overall inflation rate, measured by the GDP price index, since 1980 (Chart 1).<sup>1</sup> The GDP price index is a broader measure of the general price level than the CPI, reflecting purchases by businesses and governmental units as well as consumers. The ECI increased by about 10 percent in 1981, when the country was experiencing high overall inflation

## METHODOLOGY OF THE ECI

This article focuses on the ECI for nonfarm private-sector employees. Series are also available for state and local government workers and for nonfarm civilian employees, which combine nonfarm private-sector employees with state and local workers. The survey excludes proprietors, the self-employed, household workers, and federal government workers.

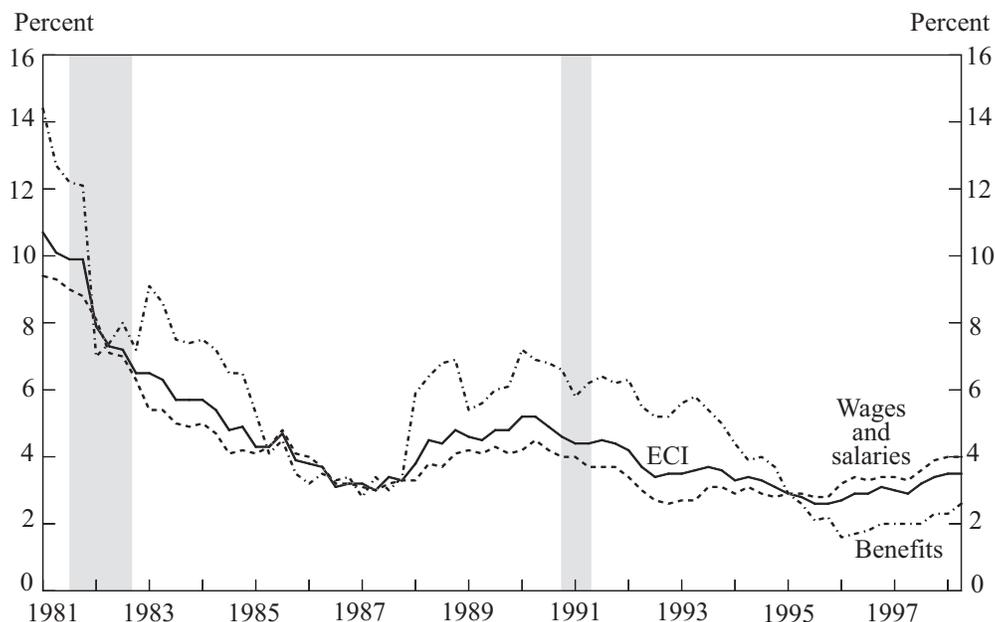
Compensation consists of two major components. Wages and salaries, the first major component, include straight-time hourly wages and, for workers not paid on an hourly basis, straight-time earnings divided by corresponding hours. Straight-time wage and salary rates also include production bonuses, incentive earnings, commission payments, and cost-of-living adjustments. Benefits, the second major component, include several different categories. Paid leave consists of paid vacations, holidays, sick leave, and so forth. Supplemental pay includes premium pay for overtime, shift differentials, nonproduction bonuses, and lump-sum payments in lieu of wage increases. Insurance benefits include employer payments for health, life, and accident insurance, while retirement and savings benefits include employer costs for pension and other retirement plans and for thrift and savings plans. Legally required benefits, the largest category in total benefits, include employer payments for Social Security, railroad retirement, unemployment insurance, and other benefits required by state and federal law. Other payments, the final category under benefits, include severance pay and supplemental unemployment plans.

The ECI is based on a large survey of nonfarm private-sector employers as well as state and local governments. The latest quarterly sample consisted of about 18,800 occupations in 4,500 private nonfarm firms and about 4,200 occupations in 800 state and local government units. Data are collected each quarter for the pay period including the 12th day of March, June, September, and December.

The ECI is a weighted sum of the changes in compensation costs for various industry-occupation categories. Economists call such a fixed-weight index number a Laspeyres index. The ECI is calculated with a two-step procedure. After categorizing each observation by industry and occupation, average compensation is computed for each of the resulting categories. These average changes in turn are aggregated across categories using fixed weights based on the 1990 Occupational Statistics Survey. The reported ECI series are seasonally adjusted, where appropriate.

The BLS is currently revising its survey procedures to eliminate data duplication and improve the quality of published compensation statistics. Other methodological changes have also been considered, such as alternative index number formulas for computing wage and benefit costs. Publications by the U.S. Department of Labor, Bureau of Labor Statistics (1995, 1997) give more detailed descriptions of the current ECI methodology.

Chart 2  
ECI AND COMPONENTS



Notes: Percent changes are from four quarters earlier. ECI is not seasonally adjusted. Shaded areas represent recessions.  
Source: Bureau of Labor Statistics.

rates. But the recession in the early 1980s produced substantial slack in labor and product markets, lowering ECI inflation to 3.2 percent and GDP price inflation to 2.5 percent in 1986. As labor and product markets tightened in the late 1980s, both inflation rates rose by about two percentage points, but another recession helped lower ECI inflation to 2.6 percent and GDP price inflation to 2.1 percent in 1995. However, ECI inflation and GDP price inflation have diverged somewhat since 1995, with ECI inflation increasing slightly to 3.4 percent in 1997 even as GDP price inflation continued to drift downward.<sup>2</sup>

Growth rates of the two major ECI components have sometimes differed substantially in the 1980s and 1990s (Chart 2). The growth rate

of benefit costs exceeded the growth rate of wages and salaries over most of this period. For example, benefit costs grew at an average annual rate of 5.6 percent from the second quarter of 1981 to the fourth quarter of 1994, well above the average growth rate for wages and salaries of 4.0 percent over the same period. However, benefit cost inflation has slowed sharply in the last few years, while wage and salary gains have increased moderately. As a result, benefit costs have risen at only 2.0 percent annually from the fourth quarter of 1994 to the second quarter of 1998, well below the 3.5 percent rate for wages and salaries.

As with all economic statistics, the ECI is subject to measurement problems. For example, the ECI does not capture certain forms of labor com-

pensation, such as stock options and signing bonuses. Moreover, the Bureau of Labor Statistics collects information for only a small percentage of all relevant employees because of the costs involved. As a result, the ECI will have “sampling errors” when wages and benefits for this small group do not behave exactly the same as wages and benefits for all relevant employees. In addition, the ECI is computed for a fixed basket of industries and occupations, similar to the fixed market basket of goods and services in the consumer price index. As a result, the ECI is potentially subject to statistical biases caused by the fixed industry-occupation weights. Economists have criticized the CPI for this and other biases, suggesting that the index has overstated the inflation rate.<sup>3</sup> However, research conducted at the BLS found the use of fixed industry-occupation weights does not cause large statistical biases in the ECI.<sup>4</sup>

#### *Comparison with other labor cost measures*

The ECI differs in various ways from two other measures of labor costs, average hourly earnings and unit labor costs. The average hourly earnings series reflects changes in basic hourly and incentive wage rates as well as such variable factors as premium pay for overtime and late-shift work. Being a monthly series, the average hourly earnings series is more timely than the ECI. But the ECI is a more complete measure of labor costs because it includes many important elements of labor compensation, such as nonproduction bonuses, health insurance, and payroll taxes paid by employers, that are not in average hourly earnings. Another drawback of the average hourly earnings series is that its coverage is restricted to production workers and nonsupervisory employees, thereby excluding the compensation of business managers. The average hourly earnings series also does not apply fixed weights across industry-occupation categories, as does the ECI. As a result, a shift in the mix of jobs away from low-paying occupa-

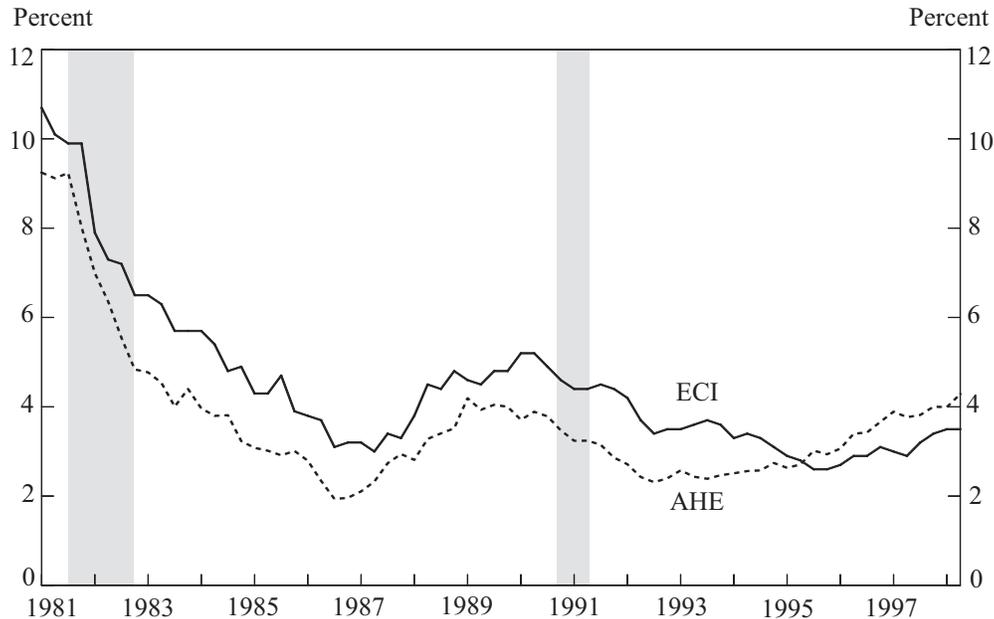
tions toward high-paying occupations would be recorded as wage inflation even if the wages paid by the particular jobs had not changed.<sup>5</sup>

Despite these differences, the ECI and average hourly earnings have displayed broadly similar movements since the early 1980s (Chart 3). Except for the last three years, the ECI has risen faster than average hourly earnings, partly reflecting the rapid increase in health insurance costs, which is not captured by average hourly earnings. Recently, average hourly earnings accelerated somewhat more than the ECI, rising 4.0 percent in 1997 compared with a 3.4 percent advance in the ECI. However, the wages and salaries component of the ECI matched movements in average hourly earnings more closely, rising 3.9 percent in 1997.<sup>6</sup>

The ECI differs from unit labor costs, another widely quoted measure of labor costs, in several ways. Unit labor costs equal labor compensation per hour divided by output per hour, where output per hour measures labor productivity. Like the ECI, unit labor costs include nonwage benefit costs, such as Social Security taxes and health insurance costs paid by employers. But unit labor costs also include some compensation, such as proprietor's income, that is not in the ECI. A potential disadvantage is that the compensation per hour measure used to calculate unit labor costs does not apply fixed industry-occupation weights as does the ECI. As a result, an increase in compensation caused by a shift in the employment mix toward higher paying jobs could be misinterpreted as labor cost inflation.

An important advantage of unit labor costs relative to the ECI, however, is the adjustment for changes in labor productivity. If an increase in labor compensation is matched by an increase in productivity, the labor cost per unit of output will not rise, and there may be no upward pressure on the prices or profit margins of firms. Some adjustment for productivity changes seems essential in judging the upward pressure on

Chart 3  
ECI AND AVERAGE HOURLY EARNINGS



Notes: Percent changes are from four quarters earlier. ECI is not seasonally adjusted. Shaded areas represent recessions.  
Source: Bureau of Labor Statistics.

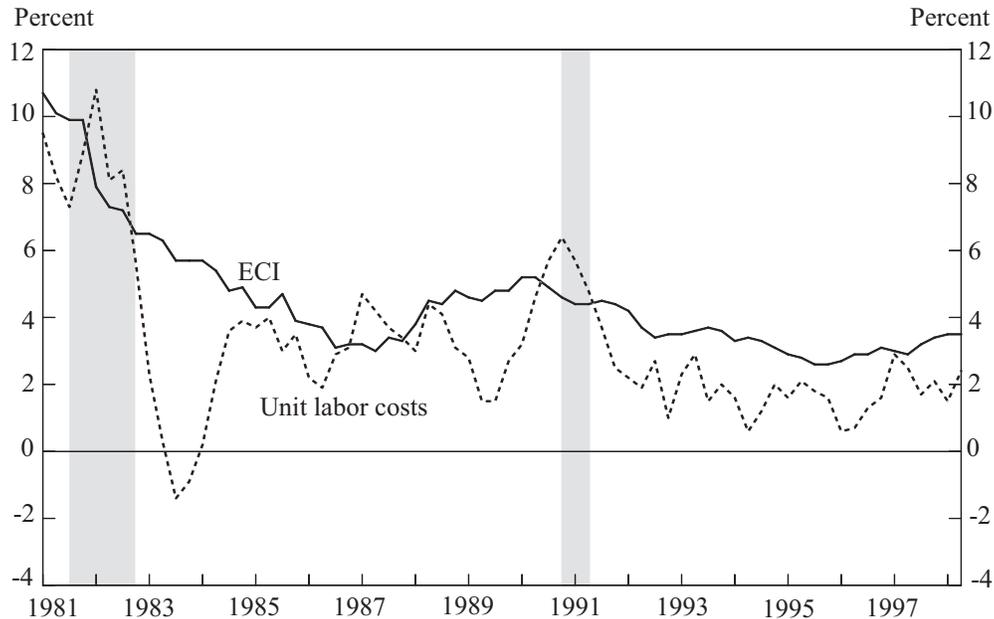
product prices, particularly in the current environment where some economists contend that a pickup in labor productivity growth is allowing faster gains in compensation without putting upward pressure on the general inflation rate.<sup>7</sup>

The growth rate of the ECI does not match unit labor cost growth as closely as it matches changes in average hourly earnings.<sup>8</sup> The growth rate of unit labor costs is more volatile than ECI inflation, illustrated most dramatically by a decline in unit labor costs in 1983 (Chart 4). This greater volatility reflects the strong cyclical aspect of labor productivity. For example, early in an expansion, firms may boost their output without hiring additional workers, resulting in a strong reported increase in labor productivity and weak

growth of unit labor costs. The decline of unit labor costs in 1983 reflected such a rebound in labor productivity as the economy recovered from the recession in the early 1980s.

This discussion of alternative measures suggests that the ECI probably is the best overall measure of labor costs, but other measures may be preferred for certain purposes. The monthly series for average hourly earnings gives a more up-to-date reading of wage trends than the quarterly ECI, which may be an advantage in certain tasks where timeliness is essential. In most other respects, the ECI is a better measure because it includes benefit costs and is not distorted by shifts in the industry-occupation mix. Unit labor costs may be preferable to the ECI for under-

Chart 4  
ECI AND UNIT LABOR COSTS



Notes: Percent changes are from four quarters earlier. ECI is not seasonally adjusted. Shaded areas represent recessions.  
Source: Bureau of Labor Statistics.

standing broad inflationary pressures because the ECI is not adjusted for productivity changes. But when analysts need a “pure” measure of labor compensation growth, the ECI will often be preferred.

## II. DO LABOR COSTS PREDICT INFLATION?

Recent concern about labor costs has centered on whether the faster pace of wage gains, shown in Charts 2 and 3, foreshadows a rise in general inflation. In addition, some analysts have asked whether the moderation in the benefit cost component of the ECI over the last few years is sustainable, or whether a return of benefit cost inflation to the higher levels experienced in the

past will put upward pressure on general inflation. This section shows that, based on current empirical evidence, labor costs cannot be considered a highly reliable predictor of general inflation. In addition, economic theory suggests that higher benefit cost inflation does not necessarily imply an increase in total labor compensation growth or general inflation.

### *Evidence on the predictive relationship*

The key issue in using the ECI to forecast price inflation is whether movements in the growth rate of labor costs consistently precede movements in some measure of general inflation. Economic theory does not necessarily imply that labor costs should be useful in predicting infla-

tion. For example, many economists have adhered to a “markup pricing” model in which product prices are set by a markup over labor costs. If the markup is fixed over time, then inflation in product prices might be due solely to rising labor costs. But logically, product prices should be set primarily in the markets for goods and services, not the labor market. Rising labor costs may, at times, put upward pressure on product prices, but weak product prices may, at other times, cause firms to offer lower rates of labor compensation. The markup of prices over labor costs is likely to vary over time in response to competitive pressures in the product market, changes in other production costs, and so forth. Moreover, labor costs often reflect expected inflation because firms and workers take future inflation into account when negotiating labor contracts, and because some labor contracts adjust wages in response to observed changes in the price level. Thus, at the theoretical level, it is unclear whether changes in labor cost inflation will precede changes in general inflation.

Because economic theory does not provide a definite answer, it is necessary to examine empirical evidence on whether labor cost inflation has helped historically to predict general inflation. Although this article focuses on the ECI, most empirical studies have used other measures of labor compensation, particularly unit labor costs. Empirical studies generally have not used the ECI to measure labor compensation because the series is available over too short a period to obtain reliable statistical estimates. In addition, the first section argued that unit labor costs are better for assessing general inflationary pressures because this measure takes labor productivity changes into account. Empirical studies using unit labor costs may still provide some guidance on the predictive value of the ECI, however, because a finding that unit labor costs do not predict inflation would certainly cast doubt on the ECI, which is less well suited to general inflation forecasting.

Many empirical studies have focused on the timing relationship between labor cost growth and general inflation without controlling for other variables. Studies using broad measures of the price level, such as the GNP deflator, have found little evidence that labor cost inflation predicts general inflation. For example, Gordon concluded that past changes in labor compensation were not useful for predicting inflation in the 1980s.<sup>9</sup> Gordon found that labor compensation helped predict inflation before the 1980s, however, suggesting there had been an important shift in the economic structure. Mehra (1991, 1993) adopted a different statistical methodology designed to explicitly take long-run relationships between general inflation and unit labor costs into account. He also found that labor cost inflation does not help to predict general inflation, although there was some evidence that the inflation rate helps to predict changes in labor compensation.

Studies using consumer prices to measure inflation ultimately suggest the same overall conclusion, although the results have been a little more mixed. Mehra (1993) found evidence for the period from 1955 to 1992 that unit labor costs helped somewhat to predict future CPI inflation, but changes in CPI inflation also helped predict future labor compensation growth. More recent work by Emery and Chang concluded, however, that changes in unit labor costs never helped predict CPI inflation or core CPI inflation after 1980. Their finding of an instability in the relationship between labor cost inflation and consumer price inflation in the early 1980s was consistent with Gordon’s earlier finding, although neither study gave an explanation for this important change in the economy.

A recent study by Huh and Trehan extended the research on the relationship between labor costs and broad inflation measures by separating unit labor costs into two components, labor compensation per hour and output per hour in the business sector. Compensation per hour is a

fairly close counterpart to the ECI, although it does not hold the industry-occupation mix constant over time. By decomposing unit labor costs in this fashion, Huh and Trehan addressed more precisely the predictive relationship between labor compensation growth and general inflation. They concluded that compensation growth does not help to predict general inflation, but there is a predictive relationship from price inflation to compensation growth.

Although important contributions to the empirical literature, these studies have not settled the issue of whether labor cost inflation predicts general inflation. The studies have important methodological advantages, such as their close attention to the statistical properties of the economic series and their careful modeling of the long-run relationships between such variables. However, the studies have generally not controlled for other variables that might reasonably be expected to affect the inflation process. The study by Huh and Trehan did control for productivity growth as an influence on wages and prices. But none of these studies included changes in oil prices, the exchange rate, or industrial capacity utilization in the equation explaining the general inflation rate.

Other recent studies have found some evidence that labor cost growth affects general inflation. For example, Lown and Rich estimated a model relating core CPI inflation to the amount of slack in the economy, lagged inflation, and oil prices over 1965-96. The model badly overpredicted inflation over the last few years, but performed much better after unit labor costs were included. Lown and Rich concluded that "slow compensation growth appears to be a key force in restraining inflation over the current expansion." Such studies have done a better job of controlling for other influences on general inflation, but may not have done as good a job of modeling long-run relationships between labor compensation and product prices. In addition, Lown and Rich did not allow for a possible break

in the wage-price relationship in the early 1980s, suggesting the statistical significance of unit labor costs might come largely from the pre-1980 portion of the sample.

Some additional support for a predictive relationship from labor compensation to prices comes from a study that uses the ECI as the measure of labor compensation. Similar to many other researchers, Brauer found that the evidence on the predictive relationship between the overall ECI and core CPI inflation is mixed, at best. But Brauer also tested for a predictive relationship using components of the ECI and the CPI. He found that the ECI for private-industry workers in the service producing sector of the economy is useful in predicting changes in the CPI for labor-cost-sensitive services. However, a similar predictive relationship cannot be found with the ECI for goods producing industries and the CPI for labor-cost-sensitive goods. This finding is appealing because service producing industries have not, in general, been subject to the same intense international competition and rapid productivity growth that have affected many goods producing industries. Thus, inflation rates for services may have been more closely related to labor cost pressures than inflation rates for goods in the 1980s and 1990s. However, the robustness of this finding may be difficult to determine until more observations of the ECI and its components become available, something that can occur only with the passage of time.

The study by Brauer is a reminder that further research can be done on this issue, and that useful predictive information might exist at the sectoral level. But at the aggregate level, the empirical results are mixed, and do not demonstrate a dependable predictive relationship from labor cost growth to the general inflation rate.

#### *What about benefit costs?*

Some of the recent interest in labor compensation growth has also come from the differing

behavior of the ECI's wages and salaries component and its benefits component. As Chart 2 showed, the slow growth of employee benefit costs over the last three years is unusual from a historical perspective. Many analysts have asserted that this moderation is due to special factors, such as a one-time reduction in health-care costs as many businesses switched their employees from traditional health insurance plans to health maintenance organizations (HMOs).<sup>10</sup> These analysts have worried that, once the special factors have run their course, benefit cost inflation would rise back to earlier levels, increasing total ECI inflation and, eventually, the overall inflation rate. Adding to these concerns, employer costs for health insurance have grown faster over the last year.<sup>11</sup>

Although there may be reasons for concern, analysts cannot be certain that rising health insurance costs will put upward pressure on general inflation. The previous section showed that an increase in total ECI inflation may not reliably predict higher general inflation. In addition, an increase in a particular component of the ECI, such as health insurance costs, does not necessarily cause a worsening of total labor cost growth.

Businesses should be concerned mostly about the total compensation paid to workers, and much less about the mix between wages and fringe benefits. Theory suggests that compensation is determined in a competitive labor market by the forces of supply, reflecting population growth and labor force participation rates, and demand, reflecting primarily worker productivity. For example, the average worker in private industry received wages and benefits worth \$18.50 per hour in March 1998. A firm can afford to pay this amount of total compensation to an additional worker only if employing that worker can be expected to increase the firm's revenues by at least \$18.50 per hour.

For any given rate of total labor compensation, though, a competitive employer may be willing

to bargain with employees about the most desirable mix of wages and fringe benefits. Businesses may even be able to increase the productivity of their work force slightly by adjusting the mix of wages and benefits to attract workers who are particularly suited to that industry. For example, a firm that finds mature workers particularly desirable might offer lower than average wages, but better health and retirement benefits. Although firms may adjust the compensation mix to obtain the most desirable employees, any resulting effects on labor productivity and total compensation are likely to be small compared with more fundamental influences, such as population growth, technological change, and the rate of business capital formation.

If rising health care costs force the benefits component of labor costs up at a rapid rate, firms may respond by granting smaller increases in some other component, such as wages and salaries or pension benefits. By doing this, firms may be able to keep total compensation growth at a rate that is justified by the growth in labor productivity. For example, if labor supply and demand justified an increase in total compensation of 4 percent but health insurance premiums rose 8 percent, then other compensation would have to rise by less than 4 percent to keep compensation gains from reducing business profits. Conversely, a decline in health care inflation, such as occurred in the last few years, might permit faster growth of wages and salaries.

Even if the growth in health care costs does rise from recent low rates, health insurance premiums will not necessarily return to the rapid gains seen in the 1980s and early 1990s. Many analysts have presumed that the switch to HMOs and similar cost reduction efforts by firms would not permanently lower the growth rate of health care costs. If the rise in health care costs is largely driven by technological changes that introduce progressively more sophisticated and more expensive medical technologies, health care costs might be expected to continue rising

rapidly because there has been no apparent decline in the rate of medical innovation. Recent research suggests, however, that increased HMO enrollment might slow the diffusion of expensive new medical technologies (Cutler and Sheiner). As a result, the shift toward HMOs and other forms of managed medical care might have a long-term effect on the growth rate of employer costs for health insurance. Only time will tell which view of health care costs is correct, but an acceleration in benefit cost inflation does not appear to be a sure thing.

A mixture of theoretical reasoning and empirical studies suggests, therefore, that the growth rates of the ECI and its components are not highly dependable indicators of future inflation. It would be too strong a reading of the available evidence to say that labor costs are irrelevant to firms' pricing decisions, or that policymakers cannot gain insights about inflationary pressures from a careful analysis of the ECI series. But the relationships between labor costs and product prices are intricate, and general inflation may influence labor cost inflation as much as the other way around.

### III. BETTER USES OF THE ECI

Although the ECI is not highly dependable for predicting future inflation, the index and its components are useful for many other purposes. The ECI survey provides a wealth of information on the composition of employee wages and benefits, as well as series for particular industries and occupations. Such statistics are useful for analyzing changes in labor market conditions, and even in identifying broader economic trends. In addition, the ECI may have practical uses, such as adjusting wages or prices in private-sector contracts for changes in the overall compensation level.

#### *Analyzing the structure of compensation*

Knowledge about the structure of labor com-

penensation may be useful for many purposes. Labor market analysts might, for example, be interested in how the welfare of American workers has changed in recent years under the pressures of international competition and corporate restructuring. In addition to wages and salaries, welfare also depends on how well the worker is protected against various contingencies, such as health problems, an unusually long retirement, or a period of unemployment. Provisions by private firms for such contingencies are often reflected in employee benefits.

For a more detailed look at the components of labor compensation, analysts might turn to a series that is closely related to the ECI, the BLS statistics on Employer Costs for Employee Compensation (ECEC). The ECEC presents cost levels derived from the same statistical sample as the ECI. However, these figures combine cost statistics across industry and occupation categories using current employment counts rather than the fixed weights of the ECI. As a result, the ECEC presents a snapshot of the compensation structure at a particular point in time, whereas the ECI is a better measure of pure labor cost inflation (Schwenk 1997a).

Table 1 presents the components of labor compensation as cost levels per hour worked and as percentages of total compensation. Wages and salaries were 72.8 percent of total compensation in March 1998, the latest period for which such statistics have been published. Total benefits made up the remaining 27.1 percent of labor compensation. Legally mandated benefits, such as employer contributions for Social Security and worker compensation, were the largest component of total benefits, equal to 8.8 percent of total compensation. Paid leave was the next largest component, equal to 6.3 percent of compensation, followed by employer-paid insurance at 5.9 percent. The remaining smaller benefit components are supplemental pay, including overtime and shift-differential pay, and employer contributions to retirement and savings plans.

Table 1

## EMPLOYER COSTS FOR EMPLOYEE COMPENSATION

*Private industry, March 1998*

| Compensation component          | Cost    | Percent |
|---------------------------------|---------|---------|
| Total compensation              | \$18.50 | 100.0   |
| Wages and salaries              | 13.47   | 72.8    |
| Total benefits                  | 5.02    | 27.1    |
| Paid leave                      | 1.16    | 6.3     |
| Vacation pay                    | .58     | 3.1     |
| Holiday pay                     | .40     | 2.2     |
| Sick leave pay                  | .14     | .8      |
| Other leave pay                 | .05     | .3      |
| Supplemental pay                | .56     | 3.0     |
| Premium pay                     | .22     | 1.2     |
| Shift pay                       | .05     | .3      |
| Nonproduction bonuses           | .29     | 1.6     |
| Insurance                       | 1.10    | 5.9     |
| Life insurance                  | .04     | .2      |
| Health insurance                | 1.00    | 5.4     |
| Sickness and accident insurance | .04     | .2      |
| Long-term disability insurance  | .02     | .1      |
| Retirement and savings          | .55     | 3.0     |
| Defined-benefit plans           | .24     | 1.3     |
| Defined-contribution plans      | .30     | 1.6     |
| Legally required benefits       | 1.63    | 8.8     |
| Social Security                 | 1.12    | 6.1     |
| OASDI                           | .90     | 4.9     |
| Medicare                        | .22     | 1.2     |
| Federal unemployment insurance  | .03     | .2      |
| State unemployment insurance    | .11     | .6      |
| Worker compensation             | .36     | 1.9     |
| Other benefits                  | .03     | .2      |

Source: Bureau of Labor Statistics.

Employers help protect their employees against medical emergencies by contributing toward health insurance premiums. Partly reflecting pressures on health care costs, the share of insurance in employee compensation generally rose from the mid-1980s to the mid-1990s, but has declined slightly in recent years as health care inflation has moderated. The reduced rate of health care inflation may reflect aggressive efforts by many employers to contain these costs by switching from traditional health insurance plans to health maintenance organizations and other managed care plans. But a trend with potentially greater welfare implications is a decline in the percentage of the labor force having health care coverage, due to corporate outsourcing and growth of the contingent labor force. Contingent workers are temporary or part-time employees who may not receive the complete benefit package available to full-time employees.

Adequate provision for retirement is another labor market issue of concern. Retirement and savings were the only major component of total compensation to decline significantly, falling from 3.8 percent of compensation in 1986 to 3.0 percent in 1998. Partly, this decline may reflect reduced retirement contributions by employers after strong stock and bond market gains resulted in overfunded pension plans. But the decline also may have reflected a more active effort by some employers to control pension and savings plan costs by shifting from defined-benefit plans to defined-contribution plans, or by shifting the mix of their work force toward more contingent workers, who were not eligible for company-sponsored retirement and savings plans.

A final area where employee benefit costs are closely related to worker protection against risks is legally required benefits, such as Social Security and unemployment insurance. Legally required benefits rose slightly to 8.8 percent of total compensation in 1998 from 8.4 percent in 1986. In part, this gain reflected increases in the Social Security tax rate by 5 percent in 1988 and

1.9 percent in 1990, along with increases in the taxable earnings ceilings for the Medicare and non-Medicare portions of Social Security. In addition, contributions to state unemployment and workers' compensation insurance increased by relatively large amounts in the early 1990s.

### *Analyzing sectoral trends*

Analysts also may find it useful to consider labor compensation statistics on a sectoral basis. For example, an important recent trend has been the shift of employment shares from the goods producing sector toward the service producing sector. This shift might affect many important economic issues, such as the rate of aggregate productivity growth or the cyclical stability of the economy. Labor compensation statistics across sectors may help analysts to confirm and, ultimately, to understand such important trends.

The ECI survey can be broken down into various industry and occupational categories, which may help to reveal important structural changes in the labor and product markets. Table 2 presents changes in the ECI for several industry and occupational groups in the 1980s and 1990s. Consistent with the shift toward a service economy, workers in service producing industries experienced stronger annual gains in labor compensation than workers in goods producing industries. Compensation for workers in service producing industries rose at a 5.2 percent average annual rate from the second quarter of 1981 to the second quarter of 1990, well above the 4.6 percent average rate for workers in goods producing industries.<sup>12</sup> However, the difference across these sectors narrowed to only 0.1 percentage point annually in the 1990s.

Similar differences in compensation growth are evident when comparing white-collar and blue-collar employees, or union and nonunion workers. Compensation costs for white-collar workers rose at a 5.3 percent average annual rate from the second quarter of 1981 to the second

Table 2

## ECI GROWTH BY INDUSTRY AND OCCUPATION

(Percent change at annual rate)

|                     | <u>1981:Q2 to 1998:Q2</u> | <u>1981:Q2 to 1990:Q2</u> | <u>1990:Q2 to 1998:Q2</u> |
|---------------------|---------------------------|---------------------------|---------------------------|
| Goods producing     | 4.0                       | 4.6                       | 3.3                       |
| Service producing   | 4.3                       | 5.2                       | 3.4                       |
| White collar        | 4.4                       | 5.3                       | 3.5                       |
| Blue collar         | 3.8                       | 4.4                       | 3.2                       |
| Union               | 3.9                       | 4.4                       | 3.3                       |
| Nonunion            | 4.3                       | 5.1                       | 3.4                       |
| Memorandum:         |                           |                           |                           |
| GDP price inflation | 3.4                       | 4.0                       | 2.6                       |

Source: Bureau of Labor Statistics, Bureau of Economic Analysis.

quarter of 1990, well above the 4.4 percent average rate for blue-collar workers. The difference between white-collar and blue-collar compensation gains narrowed, however, from 0.9 percentage point annually in the 1980s to 0.3 percentage point annually in the 1990s. Nonunion workers received compensation gains averaging 5.1 percent annually from the second quarter of 1981 to the second quarter of 1990, 0.7 percentage point higher than the comparable gain for union employees. But the difference in compensation growth between nonunion and union workers narrowed to 0.1 percentage point annually in the 1990s.

The growth of the service sector has probably had an important effect on all of these industry and occupational categories. The shift in employment share toward the service sector has been due to several factors, including increased demand for services, changing consumer tastes in favor of customized products, rapid productivity growth in the manufacturing sector, and increased outsourcing (Kozicki). The shift toward a service economy in turn has had a major

effect on the other categories in Table 2 because service-sector employees are more likely to be nonunion and white collar. In addition, the growing use of computers may have benefited white-collar earnings because firms have had to offer higher salaries to attract workers with the required technical skills.

*Wage setting and indexation*

Besides having value in labor market analysis, the ECI may be useful in making many practical labor compensation decisions. When setting compensation for employees, firms often use various national and local compensation statistics as reference points. At the national level, the ECI is probably the best measure of "pure" labor cost inflation over time because it holds the mix of industries and occupations constant. Other labor compensation measures could be used for this purpose, but such indexes inevitably would confuse changes in the compensation rate for a given job with a change in the mix of jobs. The ECI is also potentially useful to employees and labor unions

in negotiating wages and benefits. Moreover, firms and workers may be able to find compensation indexes for particular industries and occupations that closely match their own situations.

The ECI also may be useful for the indexation of multiperiod contracts involving either labor or products. Indexation means that a particular compensation rate or price is adjusted while the contract is still in force for broader changes in the compensation level or price level. A labor contract might, for example, contain a clause that would adjust compensation rates for a particular group of workers to keep pace with what is being paid to workers at other firms. Or a long-term sales contract might adjust the price of the given good or service periodically for increases in relevant labor and materials costs. Such adjustments might be based on a weighted average of labor cost increases, represented by some component of the ECI, and materials cost increases, represented by a component of the producer price index (Schwenk 1997b). In some cases, indexation facilitates long-term production

relationships that may be more economically efficient than shorter term relationships.

#### IV. CONCLUSION

The ECI and its components, thus, appear to be more dependable for labor market analysis and wage setting than for general inflation forecasting. When forecasting the general inflation rate, policymakers and their staffs should probably continue to monitor these series because a few studies have found that labor costs have predictive value, and detailed analysis at the sectoral level may give an insight into inflationary pressures in particular industries. But better uses of the ECI seem to be analyzing basic trends in the structure of compensation and in the performance of various sectors of the labor market. Sometimes, the labor market trends even help shed light on broader economic trends, such as the differing performance of the goods producing and service producing sectors. The ECI series also have practical value to firms and workers in negotiating compensation agreements and writing long-term contracts.

#### ENDNOTES

<sup>1</sup> This article will focus on the behavior of the ECI and its components from 1981 to the present. The statistics on wages and salaries for private-industry workers were first introduced in 1975. Additional series were gradually added in subsequent years. For example, employer costs for benefits were added in 1980, and the state and local government sector was included in 1981.

<sup>2</sup> On average, the ECI has increased at a somewhat faster rate than the GDP price index. From the second quarter of 1981 to the second quarter of 1998, the ECI increased at a 4.2 percent average annual rate, while the GDP price index rose at a 3.3 percent rate. The contemporaneous correlation between ECI inflation and GDP price inflation, both measured as the percent change from four quarters earlier, is quite high at 0.95.

<sup>3</sup> Recent revisions to the CPI are alleviating many of these statistical problems. In January 1999, the BLS will begin using geometric means for certain categories in the CPI to further reduce any overstatement of the CPI inflation rate.

The use of geometric means better allows for substitution by consumers between products in the same expenditure category when the price of one of those products rises.

<sup>4</sup> Lettau, Loewenstein, and Cushner found that estimated changes in the ECI over time are not highly sensitive to the index number formula employed. They examined alternative index number formulas for aggregating across industry-occupation categories as well as the use of arithmetic versus geometric means for aggregating individual job quotes within categories.

<sup>5</sup> Another problem with average hourly earnings has been that the measure consistently displayed stronger growth in months with fewer workdays. This distortion was traced to a processing error affecting firms that do not pay their workers on a weekly basis. The BLS began with the June 1998 data to adjust average hourly earnings in the wholesale trade, services, and finance, insurance, and real estate sectors to control for this calendar-related distortion. The adjusted average hourly earnings series will give a

more accurate assessment of month-to-month changes, but the broader earnings trends discussed in this article should not be affected.

<sup>6</sup> The correlation between the total ECI and average hourly earnings is 0.89 for the period from the second quarter of 1981 to the second quarter of 1998. The wages and benefits component of the ECI has a higher correlation with average hourly earnings of 0.94 for this period.

<sup>7</sup> However, other economists question the accuracy of the labor productivity statistics, especially in the rapidly growing service producing industries where output is intrinsically difficult to measure. Large measurement errors in productivity could carry over into large errors in measuring unit labor costs.

<sup>8</sup> The correlation of the ECI with unit labor costs is 0.63 for the period from the second quarter of 1981 to the second quarter of 1998, smaller than the correlation between the ECI and average hourly earnings.

<sup>9</sup> Gordon measured labor costs by average hourly earnings, adjusted for overtime, employment mix, and fringe benefits. Gordon noted that the fringe benefit adjustment is quite important in practice. He also included productivity growth in the analysis as a separate variable.

<sup>10</sup> A recent survey found that 85 percent of American workers now belong to some kind of managed care plan, up from 52 percent four years earlier (Winslow).

<sup>11</sup> Health insurance costs for private employers rose 2.6 percent over the year ending in June 1998. This increase was substantially above the 0.7 percent gain over the year ending in June 1997.

<sup>12</sup> The second quarters of 1981 and 1990 are used as reference dates because these quarters included business cycle peaks. The second quarter of 1998 was not a cyclical peak, but it should be comparable to the earlier peaks in that the economy was operating at a high level of resource utilization.

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