



Use of hourly earnings proposed to revive spendable earnings series

THOMAS E. WEISSKOPF

In 1982, the Bureau of Labor Statistics announced the discontinuation of its statistical series on "real spendable weekly earnings of workers with three dependents," which had long been used as an indicator of trends in the purchasing power of U.S. workers. This monthly series covered all production and nonsupervisory workers in the private nonfarm economy, and was based on data from the Bureau's establishment survey and information on Federal income tax and social security contribution rates.

According to the series, workers' real spendable earnings grew rapidly from 1948 through the mid-1960's, oscillated around a very slightly increasing trend for the next decade, and finally dropped sharply in the late 1970's. By 1981, the last year for which data were published, average real spendable earnings had fallen to levels recorded during the late 1950's. The implication that the average worker was no better off in the early 1980's than in the late 1950's was profoundly troubling to many economists. Evidence based on other statistical indicators (such as real per capita disposable personal income, or the gross weekly earnings of male full-time workers age 25 and older) suggested no stagnation, let alone decline, in workers' purchasing power. Economic statisticians were moved to scrutinize more carefully the real spendable earnings series, which had already begun to meet criticism during the early 1970's, and they identified a number of apparently serious shortcomings.

Criticism of the old series

The chief concerns of the critics were summarized by BLS economist Paul Flaim in a January 1982 article in the *Monthly Labor Review*:¹

- Since the mid-1960's, there has been a significant shift in the composition of the U.S. labor force, with both women and young workers accounting for an increasing share of the total. Both of these groups hold part-time

jobs with much greater frequency than older male workers, and tend to have lower paying jobs as well. As a result, a series based on average weekly earnings for all workers understates the rate of growth of (a) average hourly earnings, because hours worked per week have tended to decline; and (b) earnings of any given subgroup of workers (in particular male family breadwinners), because these better paid workers constitute a declining fraction of the labor force.

- Many of the assumptions made by the BLS in calculating the Federal income taxes paid by the "typical" worker were no longer appropriate. Most importantly, the typical worker is no longer the head of a household with three nonearning dependents. Moreover, a sizable minority of workers itemize deductions on their tax returns, rather than taking the standard deduction as assumed in the calculation of the BLS spendable earnings series.
- The BLS did not make any allowance for State and local income taxes paid by workers, deducting from gross earnings only an estimate of Federal income taxes and social security contributions.
- The BLS Consumer Price Index for Urban Wage and Clerical Workers (CPI-W), used to deflate current-dollar earnings, was a misleading indicator of the impact of inflation on workers' purchasing power, especially (but not exclusively) because of its treatment of housing costs.
- The whole concept of "spendable" earnings was inadequate. In addition to take-home pay, one should include in a measure of a worker's economic well-being an estimate of the (not immediately spendable) benefits accruing from (a) employer-provided medical insurance coverage and private pension plans; (b) social security benefits; and even (c) public services provided by Federal, State, and local governments.

Some of the criticisms levied at the old spendable earnings series are no doubt justified. But others are far from compelling. Following a discussion of the possible relevance of each of the points noted above, this article presents a new spendable earnings series that avoids the genuine shortcomings of the discontinued BLS series.

It is an indisputable fact that adult male workers constitute a decreasing fraction of the U.S. labor force. But the implication that one should ignore declines in the average

Thomas E. Weisskopf is a professor of economics at the University of Michigan, Ann Arbor.

worker's purchasing power that result from such a compositional shift (as opposed to declines in the average purchasing power of particular subgroups of workers) strikes me as mistaken. While for certain purposes one may wish to inquire into the changing economic status of particular subgroups of workers, it is certainly a matter of general interest to know what has been happening to the purchasing power of the average worker, however the characteristics of that worker may be changing in other respects.

Nevertheless, there has been a gradual decline in average weekly hours of work for production and nonsupervisory workers in the U.S. economy, in part because of the changing composition of the labor force, and trends in weekly earnings therefore do not accurately reflect trends in hourly earnings. Because workers presumably derive greater benefits from the same income if it is received for fewer hours of work, having thereby more time available for other pursuits, it would appear to make more sense to base a measure of workers' purchasing power on hourly rather than weekly earnings.

There are also problems in using tax formulas applicable to a household with one earner and three dependents, when the structure of the typical U.S. household has changed so much in recent decades. And it would be desirable to avoid the rather arbitrary assumptions about the Federal income tax return of the typical worker that BLS made in its calculations. Thus, there is a clear need for an alternative approach to measuring the fraction of workers' earnings that is paid in Federal income taxes. One would also want to take into account the State and local income taxes paid by workers, given the increasing importance of these taxes both in absolute terms and relative to Federal income taxes.

There is continuing debate about the relative merits of the CPI-W and alternative deflators, such as the Personal Consumption Expenditure (PCE) deflator from the U.S. National Income and Product Accounts, as a measure of trends in the purchasing power of a dollar of wages.² The CPI-W has been criticized for its treatment of housing costs; but it does have an advantage over the PCE series as a deflator for production and nonsupervisory workers' earnings in that its "market basket" of goods and services is designed to represent the purchases of the typical worker of this kind rather than the typical consumer. This issue might best be addressed by presenting and comparing estimates of workers' real purchasing power calculated with alternative deflators.

Finally, criticism of the whole concept of spendable earnings as an inadequate measure of a worker's economic well-being has undeniable merit. It should be noted, however, that once one opens up this welfare economist's Pandora's Box, there are a host of other considerations that begin to suggest themselves. Deferred income or benefits in kind do not exhaust the factors that contribute to the overall economic well-being of a worker; it would be impossible to enumerate all the relevant factors, let alone measure their significance with any accuracy. Under the circumstances,

it would appear most desirable to track certain measurable indicators—such as spendable earnings—while keeping quite clearly in mind their meaning and their limitations. This I propose to do here; estimating the average worker's non-spendable earnings or benefits of any kind is beyond the scope of this article.

A new spendable earnings series

To chart trends in the purchasing power of U.S. workers, I have developed a new annual time series measuring the average real spendable hourly earnings of production and nonsupervisory workers in the nonagricultural private business sector. The new series is not prone to the bias inherent in a weekly earnings series because it focuses on hourly earnings; it avoids the problems encountered by the BLS statisticians in working with Federal income tax formulas for typical families by making use of direct estimates of the actual effective rate of income taxation on earners of the relevant income size class; and it includes a (rough) allowance for State and local income taxes. The basic series is deflated using the CPI-W but, for purposes of comparison, an alternative series obtained using the fixed-weight PCE deflator also is presented.

The basic annual series is calculated by deflating the BLS series on average gross hourly earnings of production and nonsupervisory workers in all private nonagricultural establishments by the CPI-W to obtain the corresponding average gross real hourly earnings series.³ The real earnings series is then multiplied by $(1 - TRSS - TRFI - TRSI)$, where *TRSS* is the estimated effective social security tax rate on the average worker's annual earnings; *TRFI* is the estimated effective Federal income tax rate on the average worker's annual earnings; and *TRSI* is the estimated effective State and local income tax rate on the average worker's annual earnings.

The above tax rates are estimated as follows. First, the average worker's annual earnings are estimated by multiplying the BLS series on workers' average gross hourly earnings by 52 times the corresponding BLS series on average weekly hours. Then:

- *TRSS* is first set equal to the social security personal contribution rate for each year (expressed as a fraction of unity). The average worker's annual earnings are then compared with the maximum taxable wage for social security contributions; in years for which the former exceeds the latter, *TRSS* is set equal to the social security personal contribution rate multiplied by the ratio of the latter to the former.⁴
- *TRFI* is set equal to the effective Federal income tax rate on a taxpayer with an adjusted gross income equal to the average worker's annual earnings. This tax rate is determined using published Internal Revenue Service (IRS) data on sources of income, deductions, and tax items by size of adjusted gross income (for taxable returns only). "Total income tax" (after credits) is expressed as a fraction of "adjusted gross income" (less deficit) for each income

size class, and the effective tax rate for the average worker's annual earnings level is determined by interpolation between the tax rates for each income size class (attributed to the midpoints of the respective classes).⁵

- *TRSI* is roughly approximated by multiplying *TRFI* by the ratio of total annual State and local government income tax receipts to total annual Federal government income tax receipts.⁶

The resulting annual real spendable hourly earnings series from 1948 to 1981 is presented alongside the original BLS annual real spendable weekly earnings series in table 1. To facilitate comparison, an index (1948 = 100) is also shown for each series, and the two indexes are plotted against time in chart 1. According to the chart, the two series are not all that dissimilar. In both cases, spendable earnings rise rapidly from 1948 to 1965, oscillate around a much more modestly rising trend until 1977 (peaking in 1972), and then drop sharply from 1977 to 1981. By 1981 (the last year for which data are available in both series), the new series has fallen lower than at any time since 1963, and the old series is at its lowest level since 1958. The main difference is that the new series rises slightly more rapidly over the postwar period as a whole. About half of this difference is attributable to the fact that workers' average weekly hours declined fairly

steadily from 40.0 in 1948 to 35.2 in 1981.⁷

The new spendable earnings series thus paints just as troubling a picture of recent trends in purchasing power as the discontinued BLS series. The fact that the average U.S. worker has suffered a significant decline in real spendable earnings cannot be dismissed as a statistical illusion attributable to deficiencies in the BLS methodology; rather, it reflects a genuine deterioration in an important element of the average worker's economic well-being.

Some additional data

Developments over time in the statistical series underlying the new spendable earnings series also are of interest. First, chart 2 plots real gross hourly earnings against real spendable hourly earnings (gross earnings less estimated taxes). Note that the gross earnings series displays a pattern similar to that of the spendable earnings series, except that the slowdown after the mid-1960's and the decline after 1973 are not as marked. This is clearly due to the fact that the ratio of spendable to gross earnings fell significantly from the mid-1960's on.

Chart 3 shows trends in the three effective tax rates *TRSS*, *TRFI*, and *TRSI*, as well as the total of the three, between 1948 and 1981. The steady rise of the effective social security contribution rate is clearly evident. The effective Federal income tax rate oscillates around a more-or-less constant rate after rising during the Korean War, but the corresponding State and local income tax rate shows a distinct long-run upward trend (especially from the mid-1960's on).⁸

Finally, chart 4 compares the time pattern of the basic new spendable earnings series with that of an alternative spendable earnings series deflated by the fixed-weight PCE deflator rather than the CPI-W.⁹ The overall shape—and the turning points—of the two series plotted in the chart are very similar. However, the PCE-deflated series does not turn down quite as sharply after 1972 and after 1977. As a result, it peaks in 1977 rather than in 1972, and its 1981 value is the lowest since 1969, rather than since 1963. Because the fixed-weight PCE deflator did not rise nearly so rapidly over the past decade as the CPI-W, its use in calculating a real earnings series yields a smaller decline in purchasing power since 1972. But the alternative series still conveys a very discouraging impression of the trend in workers' purchasing power in recent years.

Conclusion

The new annual time series for the average real spendable hourly earnings of production and nonsupervisory workers in the nonagricultural private business sector of the U.S. economy avoids some of the shortcomings for which the discontinued BLS series has been criticized. And, over the postwar period, it displays a slightly more rapid rate of growth in workers' purchasing power. However, like the old BLS series, the new one indicates that purchasing power declined sharply through the late 1970's to reach a 1981

Table 1. BLS weekly spendable earnings series and new hourly spendable earnings series, 1948-81

Year	BLS weekly spendable earnings series		New hourly spendable earnings series	
	1977 dollars	Index (1948 = 100)	1977 dollars	Index (1948 = 100)
1948	\$122.19	100.00	\$2.83	100.00
1949	126.56	103.58	2.98	105.14
1950	131.08	107.28	3.07	108.28
1951	130.05	106.43	3.03	107.05
1952	132.12	108.13	3.07	108.54
1953	136.76	111.92	3.23	113.92
1954	137.05	112.16	3.30	116.45
1955	143.46	117.41	3.43	121.03
1956	146.92	120.24	3.55	125.22
1957	145.93	119.43	3.58	126.42
1958	144.88	118.57	3.60	127.13
1959	149.40	122.27	3.67	129.67
1960	149.20	122.10	3.72	131.34
1961	150.77	123.39	3.76	132.89
1962	154.29	126.27	3.85	135.90
1963	155.56	127.31	3.87	136.76
1964	161.27	131.98	4.01	141.46
1965	166.28	136.08	4.14	146.03
1966	165.41	135.37	4.13	145.90
1967	164.90	134.95	4.18	147.60
1968	165.99	135.85	4.22	149.00
1969	165.27	135.26	4.22	148.84
1970	163.65	133.93	4.25	149.97
1971	168.31	137.74	4.37	154.46
1972	176.35	144.32	4.54	160.23
1973	173.78	142.22	4.48	158.18
1974	165.37	135.34	4.31	152.19
1975	164.02	134.23	4.26	150.53
1976	166.00	135.85	4.34	153.38
1977	169.93	139.07	4.43	156.46
1978	167.95	137.45	4.40	155.48
1979	162.49	132.98	4.26	150.53
1980	151.65	124.11	4.03	142.39
1981	147.05	120.35	3.93	138.65

Chart 1. Indexes of real spendable earnings, BLS series and new series, 1948-81

(1948 = 100)

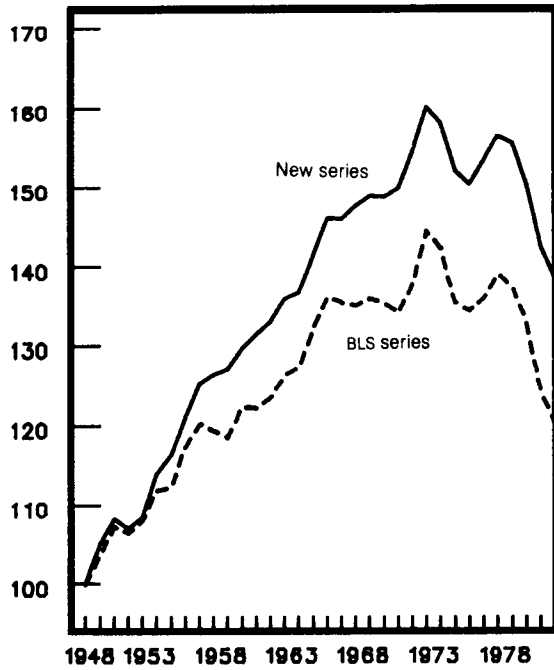


Chart 2. Gross and spendable real hourly earnings, 1948-81

1977 dollars

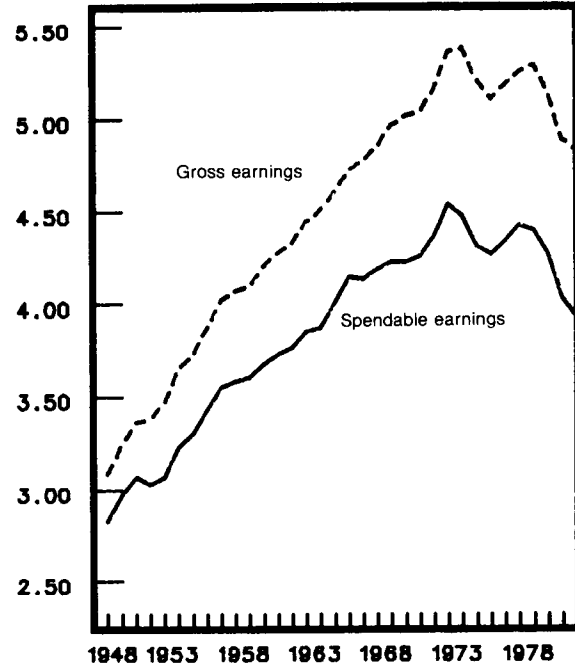


Chart 3. Trends in effective rates of taxation on gross earnings, 1948-81

Percent

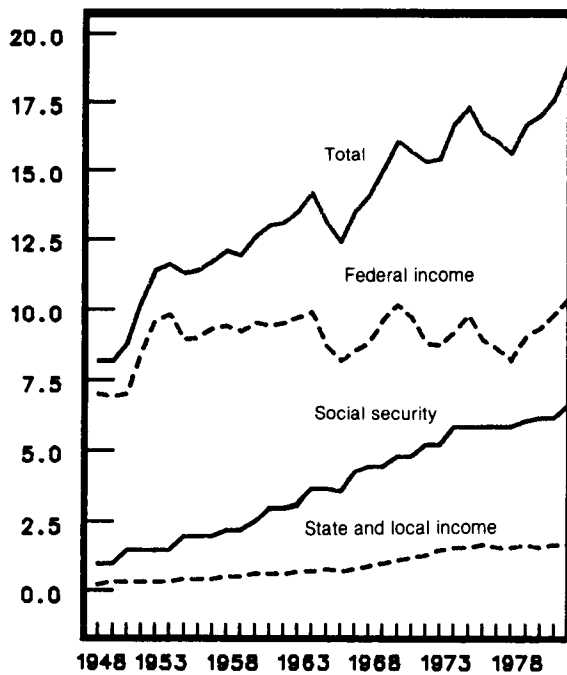
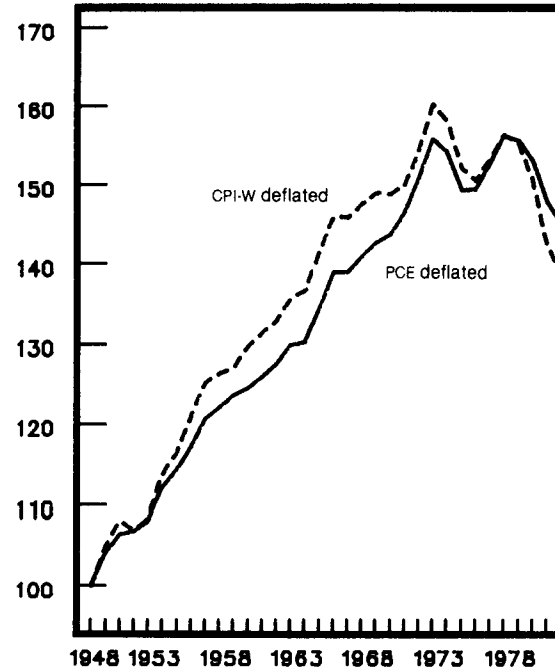


Chart 4. Trends in the new spendable earnings series using alternative deflators, 1948-81

(1948 = 100)



level roughly comparable with that recorded some two decades earlier.

There are a number of respects in which the new series could be improved. First, it would clearly be desirable to have the values available on a monthly as well as an annual basis, as in the case of the old BLS series. To calculate monthly values for the new series, one would only have to deflate BLS monthly estimates of workers' average gross hourly earnings by the CPI-W. The resulting monthly observations could then be multiplied by the ratio of spendable to gross earnings ($1 - TRSS - TRFI - TRSI$) applicable to the year in question.¹⁰

Second, the new procedure suffers from its dependence on published IRS Federal income tax data for the estimation of *TRFI* and *TRSI*. Because these data, even in preliminary form,¹¹ are usually available only after a lag of 1 to 2 years, it is not possible to provide monthly observations on the same current basis as the old BLS series. To minimize this problem, it would be necessary to develop a more approximate procedure for estimating the current effective Federal income tax rate on the average worker's annual earnings. This could be done by extrapolating from the most recently available annual observation using data on legislated rates of Federal income taxation, thus borrowing from the old BLS methodology for the purpose of providing timely preliminary figures.

Third, there are some problems in using the effective Federal income tax rate on the average worker's annual earnings to calculate *TRFI*. For example, if the typical worker has some nonwage income in addition to his or her wages, the effective tax rate on that worker's total income will be understated because of the progressivity of the tax structure. Also, if there are among the tax returns in the relevant income size bracket some that have been filed jointly by two-earner couples, the effective tax rate on that income class will understate the tax rate that would be applicable to workers who are sole wage-earners in their taxpaying unit. (The latter rate is the relevant one for the purpose at hand.¹²) Thus, the procedure I have used to estimate *TRFI* is subject to a slight downward bias, and spendable earnings are correspondingly overestimated. However, given the very modest progressivity of the Federal income tax structure and the relatively small fraction of workers for whom the above considerations are likely to apply, the bias is surely very minor.

Fourth, the method I have used to estimate the impact of State and local income taxation is very rough. A detailed examination of State income tax data might yield improvement upon my simplifying assumption of proportionality between Federal and State and local income taxation across all income classes. However, the evidence in chart 3 indicates that *TRSI* is substantially less significant than either *TRSS* or *TRFI*; thus, any bias due to the rough methodology is unlikely to have much of an impact on the spendable earnings series.

Finally, as one can tell by comparing the two series shown in chart 4, the choice of an appropriate earnings deflator is an important one for a real purchasing power series—especially for assessing trends during periods of rapid inflation such as the 1970's. Because both the CPI-W and the PCE deflator have their weaknesses, further efforts to develop a better deflator for evaluating workers' real spendable earnings are clearly warranted.¹³ □

—FOOTNOTES—

ACKNOWLEDGMENT: The author thanks Samuel Bowles and David M. Gordon, who contributed significantly to the development of this article in the context of joint research on the U.S. economy.

¹Paul O. Flaim, "The spendable earnings series: has it outlived its usefulness?" *Monthly Labor Review*, January 1982, pp. 3-9.

²For recent contributions to this debate, see Daniel J.B. Mitchell, "Does the CPI exaggerate or understate inflation?" *Monthly Labor Review*, May 1980, pp. 31-33; Jack E. Triplett, "Does the CPI exaggerate or understate inflation? Some observations," *Monthly Labor Review*, May 1980, pp. 33-35; and Janet L. Norwood, "Two Consumer Price Index issues: weighting and homeownership," *Monthly Labor Review*, March 1981, pp. 58-59.

³Unless otherwise indicated, all subsequent references to "workers" will be understood to apply to production and nonsupervisory workers in private nonagricultural establishments.

The BLS series on workers' average gross hourly earnings is published on a monthly basis in the *Monthly Labor Review* and in *Employment and Earnings*; an annual series starting in 1947 is reported in the 1983 *Economic Report of the President* (Washington, U.S. Government Printing Office), table B-38. The CPI-W is published in both its monthly and annual forms in the *Monthly Labor Review* and in the annual supplement to *Employment and Earnings*.

⁴Both the social security contribution rate and the maximum taxable wage are available on an annual basis from the U.S. Bureau of the Census, *Statistical Abstract of the United States* (Washington, U.S. Government Printing Office), and other sources.

⁵The required data are published annually in Internal Revenue Service, *Statistics of Income: Individual Tax Returns* (Washington, U.S. Government Printing Office). In the 1980 volume, sources of income are given in table 1.3, tax payments in table 3.6, and the effective tax rate in table 1.1.

⁶The required tax receipt data are reported in U.S. Office of Business Economics, *U.S. National Income and Product Accounts* (Washington, U.S. Government Printing Office), tables 3.2 and 3.3.

⁷These data are from the 1983 *Economic Report of the President*, table B-38. The 12-percent drop in average weekly hours compares with a 1948-based index number in 1981 that is 25 percent higher for the new series than for the BLS series.

⁸It is interesting to note that, although production and nonsupervisory workers in the private nonagricultural sector are taxed at a lower average rate than taxpayers as a whole, the rate differential has not been very great. Data from the NIPA on personal income taxes paid to the Federal Government (*U.S. National Income and Product Accounts*, table 3.2) and on total personal income (table 2.1) show that the average overall Federal income tax rate was generally from 1.1 to 1.15 times the estimated effective rate for the relevant workers. The existence of the differential is of course due to the progressivity of the Federal income tax system; its small size is an indicator of the modest nature of this progressivity, for the workers' average annual earnings have remained well below the average per capita personal income of all U.S. taxpayers.

⁹Because NIPA fixed-weight deflators are available only from 1959 on, I spliced the fixed-weight deflator (from *U.S. National Income and Product Accounts*, table 7.2) onto the implicit deflator (from table 7.1) at 1972 to obtain a complete series from 1948 to 1981. This seemed a reasonable choice, because 1972 is the base year for all the NIPA price indexes and there was relatively little inflation prior to 1972.

¹⁰If and when the social security contribution rate changes during the

course of a year rather than at the end, it would be easy to make the corresponding changes for the relevant months according to the procedure outlined above for estimating TRSS.

¹¹ Roughly a year before publishing the final annual volume, *Statistics of Income: Individual Tax Returns*, the Internal Revenue Service issues preliminary estimates of adjusted gross income, income tax paid, and so forth, in its quarterly publication, the *SOI Bulletin*. But these preliminary estimates are for all returns, not taxable returns only. The latter are clearly preferable for the purpose at hand; if tax rates are to be estimated from the former, they must therefore be adjusted to control for the slight differential that is observable between estimates based on all returns and on taxable returns only. On the basis of such preliminary tax rate estimates, the 1982 figure for the basic new hourly spendable earnings series is approximately \$3.96 (in 1977 dollars).

¹² Workers receiving the average wage who are in two-earner households filing jointly will have returns appearing in a higher income class bracket, but they will pay taxes at roughly the same rate as workers who are sole wage-earners in the lower income size class.

¹³ The recent change of the homeownership component of the BLS index to a rental-equivalence measure surely represents a step in the right direction.

Proposed spendable earnings series retains basic faults of earlier one

PAUL O. FLAIM

On the surface, the new spendable earnings series proposed by Professor Weisskopf appears to be a considerable improvement over the series published by the Bureau of Labor Statistics until 1981. Upon close scrutiny, however, the proposed series is found to share some of the basic deficiencies that led to the discontinuation of the old one.

Because the proposed series uses gross *hourly earnings* as its principal ingredient, it is certainly free of much of the downward pressure on earnings levels that the secular decline in the length of the workweek had applied to gross *weekly earnings* averages, the backbone of the old spendable earnings series. The fact that Professor Weisskopf attempts to account for average deductions for State and local income taxes—in addition to those for Federal income taxes and social security contributions—marks another departure from the old series.

Because of these changes—and, I suspect, primarily because of the first one—Professor Weisskopf's series does show a somewhat steeper upward trend in spendable earnings over the 1950's and 1960's than did the discontinued BLS series. To this extent, the new series would appear to yield a more accurate picture of the actual trend in earnings for the average full-time worker than was given by the old series, which was being held down by the expansion of the part-time work force.

Of more interest, however, is what the two series tell us about the changes in spendable earnings after both turned downward from their 1972 peaks. Specifically, while the

old BLS series showed a decline of 16.6 percent in real spendable earnings during the 1972–81 period, Professor Weisskopf's new series shows a somewhat comparable decline of 13.5 percent over the same period. (See chart 1, p. 41.) The fairly parallel movement of the two series over this period can lead to only one conclusion. If the old series was biased downward in portraying the trend in spendable earnings for the average worker during the 1970's—and there was ample evidence indicating a large bias—then the new one, although constructed differently, must also be seriously biased downward for the period in question.

It must be remembered that the 1970's were a period during which the age-sex composition of the work force was changing significantly, with the proportions accounted for by women and youth growing very rapidly. The fact that many of these newcomers to the job market took only part-time jobs had an obvious dampening effect on the weekly earnings average for all workers. But the hourly earnings average was also affected—in similar direction, if not in similar magnitude—by the changing mix of workers and by the growing proportion receiving lower, entry-level wages.

The extent to which the changing mix of workers affected the overall earnings average is difficult to quantify. However, some notion of its impact can be obtained merely by comparing the earnings trends for all workers with the separate trends for men and women. The tabulation below shows the percent changes—in constant dollar terms—over the 1972–81 period both for the payroll-derived series on gross weekly and hourly earnings¹ (which do not provide any information by sex) and for the household survey-derived series on weekly earnings,² which are available with some age-sex detail:

	<i>Percent change, 1972–81</i>
Payroll series:	
Mean gross weekly earnings	-14.3
Mean gross hourly earnings	-9.9
Household series:	
Median usual weekly earnings of full-time workers:	
Total	-8.6
Men, age 25 and over	-2.8
Women, age 25 and over	-1.4
Men, age 16 to 24	-11.6
Women, age 16 to 24	-12.6

While all of these earnings trends point downward for the period in question, the gross weekly earnings series, which was the cornerstone of the BLS spendable earnings series, shows a drop that far exceeded the decline in weekly earnings among most full-time workers as measured in the household survey. And the decline in gross hourly earnings, although somewhat smaller, also appears to overestimate by a considerable amount the true decrease in real earnings among most workers.

While the household series on median weekly earnings for *all full-time workers* did show a decline almost as large

Paul O. Flaim is Chief of the Division of Data Development and Users' Services, Office of Employment and Unemployment Statistics, Bureau of Labor Statistics.