The Changes in the Cyclical Variability of Wages: Reexamining the Role of Social Wages

Jae Yong Shim*

This paper critically reexamines a hypothesis that the increase in social wages was in part responsible for the decline in the cyclical variability of wages. In terms of both theoretical rationale and empirical evidence, we find that the hypothesis is fragile. We propose an alternative hypothesis that if social wages move in a strongly counter-cyclical fashion, then the cyclical variability of wages appears to decline without an overall increase in social wages. We find that some empirical results are consistent with our hypothesis. (*JEL* Classification: E24)

I. Introduction

In the late 1970s and the early 1980s several economists observed the declining sensitivity of nominal wages (and prices) to business cycle conditions in the United States. Cagan (1975), Sachs (1980), Bowles and Gintis (1982), Schor (1985a), and others provided empirical evidence on the decline in the cyclical variability of wages over the post-war period. It appeared that the decline was more prominent in the 1970s. However, Tsuru (1991) finds, in a disaggregated study, that the declining trend in the cyclical variability of wages halted and started to reverse in the 1980s.

The decline in the cyclical sensitivity of wages was a serious concern

*Department of Economics, Sangmyung Women's University, Jongno Gu, Hongji Dong 7, Seoul 110-743, Korea. This paper is a modified version of Chapter IV of my Ph.D. dissertation at the University of Massachusetts, Amherst, 1991. I am very grateful to my thesis adviser, Professor Samuel Bowles, for his suggestions. I also acknowledge helpful comments of an anonymous referee. All remaining errors are of course mine.

[**Seoul Journal of Economics** 1993, Vol. 6, No. 1]

for a wide spectrum of economists. It has important implications for labor market functioning and macroeconomic policy-making. It implies that more severe economic downturn must be implemented to reduce wage inflation to a certain level. It has been also suggested that increasing wage inflexibility may have been in part responsible for the prolonged recession in the early Reagan years. For economists working within the political economic framework, it represents a significant alteration in the workings of the capitalist economy. The failure of wages to sufficiently decrease during periods of labor market slack in effect weakens the functional role of unemployment—"the reserve army of the unemployed"—to restore profitability and thereby to provide renewed conditions for the next round of expansion.

Many explanations for the decline in the cyclical variability of wages have been put forward. The most standard explanation is that it may have been caused due to the widely used practices of counter-cyclical macroeconomic policy in the postwar period and/or the spread of multi-year collective bargaining agreements (see, for example, Sachs 1980; Taylor 1986). The former explanation is that the rather predictable implementation of counter-cyclical macroeconomic policy alters expectations of firms and workers about business cycle conditions of the near future. To the extent that counter-cyclical policy makes firms and workers perceive current business cycle conditions to be temporary and thus likely to be changed in the near future, it obviously weakens the ability of current economic conditions to regulate current behaviors. The latter is an obvious institutional obstacle to prevent a prompt adjustment of wages to business cycle conditions.[1]

Not a few economists, for example, Clark and Summers (1982) and Bowles and Gintis (1982), suggested an alternative explanation—the decrease in the cost of job loss as a result of the growth of social wages, which include unemployment benefits and other, minor in magnitude and coverage, income-maintaining welfare benefits. (Hereafter social wages and unemployment benefits are treated as interchangeable.) The increase in social wages is argued to decrease the cost associated with becoming unemployed by providing unemployed workers with alternative sources of income, and thereby to alleviate the negative pressure of unemployment on the wage and hence reduce the

[1]It is noted by Sachs (1980) that the spread of multi-year wage agreements may have been spurred by the more macroeconomic stability generated by active counter-cyclical policies.

cyclical sensitivity of wages to labor market conditions. The same logic can be applied to the increase in multiple-earner families. The essentially same view was expressed by the Council of Economic Advisers (1983) when it argued that the growth of various "safety net programs" may have made workers more resistant to wage reductions during labor market slack, hampering an efficient operation of the labor market.

Despite the potential importance of the phenomenon at issue, all these explanations did not go beyond theoretical speculations and were not subjected to careful empirical scrutiny, although there would be ample difficulties in testing some of the hypotheses. The only exception, as far as we know, is Schor's study (1985b). Schor argued that there is strong evidence that the increase in social wages had a major influence on decreasing the cyclical flexibility of wages, while rejecting other explanations such as the growth of multiple-earner families and the spread of long-term wage agreements as empirically implausible.

This paper reexamines Schor's study and shows that her result is not robust to the extension of the sample period through most of the 1980s. It will also criticize *a priori* theoretical rationale that the increase in social wages in itself induces the decline in the cyclical variability of wages. It will instead propose an alternative hypothesis that if social wages move in a strongly counter-cyclical fashion, then the cyclical variability of wages will appear to decline. Indeed, social wages have been increasingly counter-cyclical through the 1970s and since then they lost most of their counter-cyclical movement due to the Reagan administration's restructuring of the unemployment benefits system. The increasingly counter-cyclical movement of social wages might have been in part responsible for the declining cyclical variability of wages in the 1970s. It is hoped that with additional (but seemingly different) experiences of the 1980s more light can be shed on the issue.

This paper is organized as follows. Section II investigates the trend in the cyclical variability of wages over the period of 1955-88 in order to put the issue into historical perspective. Section III illustrates our argument by way of a counter-example from the labor discipline model, of course, with some qualifications. Section IV reexamines Schor's empirical evidence. Section V proposes an alternative hypothesis about the relationship between social wages and the cyclical variability of wages. Section VI concludes.

TABLE 1
TREND IN THE CYCLICAL VARIABILITY OF WAGES

	Equation (1)		Equation (2)
	1955-79	1955-88	1955-88
Constant	-2.67	2.30	
	(-1.53)	(1.14)	
55-79			1.30
			(1.44)
80-88			-3.52
			(-2.16)
$U(t-1)$	27.19	4.82	
	(3.08)	(0.46)	
55-79			9.23
			(2.21)
80-88			38.58
			(3.79)
$U(t-1)*T$	-1.28	0.57	
	(-2.27)	(0.75)	
T	0.36	-0.10	
	(3.17)	(-1.09)	
$DP(t-1)$	0.31	0.60	0.56
	(3.26)	(8.77)	(10.63)
Adjusted R^2	0.84	0.75	0.78
S.E.	0.72	1.01	0.94
D.W.	1.35	1.07	1.15

Notes: The numbers in parentheses are t-statistics. All data are from *Economic Report of the President.*

II. Trend in the Cyclical Variability of Wages

In order to investigate changes in the cyclical variability of nominal wages employing aggregate data, we first regress a simple wage change equation with time trend terms. The equation to be estimated is as follows:

$$DW(t) = a_0 + a_1U(t-1) + a_2U(t-1) * T + a_3T + a_4DP(t-1) + e(t) \quad (1)$$

where *DW* and *DP* are logarithmic rates of change of nominal wages (hourly earnings, adjusted for interindustry shifts and overtime payments) and the consumer price index, *U* is the inverse of the civilian unemployment rate (lagged one year), *T* is a time trend, and an interactive term, $U(t-1) * T$, is included to capture trend changes in the cyclical variability of wages.

The estimates shown in Table 1 shed some light on the trend in the cyclical variability of wages during the postwar period. The estimates for equation (1) show that the interactive term is found to have a negative coefficient for 1955-79 and that it is statistically significant, which confirms earlier findings for the declining trend in the cyclical variability of wages during the period. The significant and positive coefficient on the time trend term is consistent with general observations that the economy has been increasingly subject to an "inflationary bias" during the period. But when the full sample period of 1955-88 is accounted for, the coefficient on the interactive term fails to achieve statistical significance and is even positive in its sign. It suggests, although inconclusively, that the trend for declining cyclical variability of wages may have begun to reverse in the 1980s.

For a more direct test of whether there was a revival in the cyclical variability of wages in the 1980s, we run a piecewise (or linear spline) regression. Suppose that wage change equations shifted at 1979 and that they are $DW(t) = b_0 + b_1U(t-1) + b_2DP(t-1) + e(t)$ for 1955-79, and $DW(t) = b_0' + b_1'U(t-1) + b_2DP(t-1) + e(t)$ for 1980-88, respectively. It is reasonable to presume that the shift did not occur abruptly. To mitigate an abrupt change in regimes, the piecewise regression requires that the two regression lines meet at the supposed switching point, that is, in 1979. The imposition of this requirement leads to the following reformulation of the wage change equation:

$$DW(t) = b_0 + b_1[U(t-1) - U(t-1) * D + U_{78} * D] + b_1'[U(t-1) - U_{78}] * D + b_2DP(t-1) + e(t) \quad (2)$$

and $b_0' = b_0 + (b_1 - b_1')U_{78}$, where a dummy variable *D* takes on the value of 1 for 1980-88, 0 otherwise, and U_{78} is the value of $U(t-1)$ for 1979.[2]

The estimates show that the coefficients on the labor market variable are quite different for two subperiods, from 9.23 for the period of 1955-

[2]Experimentations with a couple of other switching points, 1980 and 1981, little altered the results.

79 to 38.58 for the period of 1980-88, and that the difference is highly significant. The results confirm Tsuru's finding that there was a revival in the cyclical variability of wages in the 1980s.

III. Theoretical Considerations

In order to illustrate our argument that more income protection when unemployed (the increase in social wages) does not necessarily reduce the cyclical variability of wages, we will proceed by way of a counter-example based on the labor discipline model, commonly called "shirking model" among the efficiency wage models. This procedure is not severely biased, we suppose, since those who argue to the contrary seem to often base their arguments on a similar logic.[3]

The main thrust of the labor discipline model is that the effort intensity of a worker depends to a crucial extent upon the costs to be imposed to the worker when he is dismissed. The cost of dismissal or job loss, defined as the difference between the worker's current wage and expected replacement income when he is dismissed, should be positive, of course, in order for dismissal to be a credible threat. The threat of dismissal may well be the only effective weapon in the hands of employers in regulating workers' behaviors in a capitalist economy (see, for example, Shapiro and Stiglitz 1984; Bowles 1985). It is intuitively obvious that the more the cost of job loss is, the more effective the threat of dismissal will be and hence the more work efforts will be exerted.

It is assumed that all workers and all firms are identical. Following Bowles (1985) and Summers (1988), the worker's effort intensity function is postulated as follows (the function is assumed to be well-behaved):[4]

$$E = E(L),\ E'(L) > 0,\ E''(L) < 0 \tag{3}$$

$$L = w - [(1 - S)w^a + Sw^s] \tag{4}$$

[3]It might be objected that the efficiency wage model does not apply to union wage settings. But the union representation in the labor force and the proportion of workers covered by collective agreements are much lower in the USA than in Europe. In the 1980s below one-fifth of all workers are unionized (see Reder 1988). This may justify our adoption of the efficiency wage model in which employers determine wages.

[4]This effort intensity function can be formally derived from the worker's intertemporal utility maximization framework as in Shim (1991).

Here, L is the cost of job loss, the difference between the current wage, w, and the expected replacement income when dismissed, $[(1 - S)w^a + Sw^s]$. For the unemployed worker either finds an alternative job at a wage w^a with the probability of $(1 - S)$ or remains unemployed and receives his social wage w^s at the probability of S.

The social wage, w^s, is expressed as a fixed fraction of the current wage: $w^s = Hw$, $0 < H < 1$. H will be called as the social wage ratio. (Note that H varies depending upon the duration of unemployment benefits as well as the "replacement ratio".) The identity (4) is altered as: $L = (1 - SH)w - (1 - S)w^a$.

For illustration's sake, the functional form of (3) is assumed as:

$$E(L) = b \log(L), \; b > 0 \tag{5}$$

It will be assumed that $L > 1$ to avoid negative E. The parameter b may be interpreted to reflect the monitoring technology of firms.

The problem for the firm is to maximize its profits subject to its production function and effort intensity function. Following a usual assumption that the nonlabor inputs do not affect the labor process, the firm's profit maximization problem is first to minimize the cost of a unit of work effort, i.e., $w/E(L)$. The first-order condition for a cost minimum, called as the Solow condition, is that the average work effort per wage is equal to the marginal effect of an increase in the wage on work effort. In the economy-wide equilibrium, the current wage should be equal to the alternative wage ($w = w^a$) under the assumption of homogenous firms and workers.[5] The equilibrium wage is determined by:

$$w = e^{(1 - SH)/S(1 - H)}/S(1 - H) \tag{6}$$

Note that equation (6) has determined the level of real wages as optimal responses by employers. The real wage equation implies that nominal wage change is a function of the changes in S, H, and (expected) prices. However, if we take into account the wage-price dynamics along Blanchard (1986) and Layard *et al.* (1991), we can easily express nominal wage change as a function of levels of S and H, and the price inflation. Therefore, the comparative static results that will be applied with respect to the level of real wages can be

[5]If the current wage differs from the alternative wage, there will be leapfrogging and wage-wage spiral. In equilibrium there must be no leapfrogging under the homogeneity assumption. Thus, $w = w^a$ is the equilibrium condition.

equally applied with respect to the change of nominal wages.

The comparative static results are obtained by the differentiation of equation (6) and they have expected signs:

$$\partial w / \partial S = -w[S(1-H)+1] / S^2(1-H) < 0 \quad (7)$$

$$\partial w / \partial H = w[S(1-H)+1-S] / S(1-H)^2 > 0 \quad (8)$$

The change in the cyclical variability of wages with an increase in the social wage ratio, H, is our primary interest. Differentiating equation (7) with respect to H again gives:

$$\partial(\partial w / \partial S) / \partial H = -(\partial w / \partial H) / S - [(1-H)(\partial w / \partial H) + w] / S^2(1-H)^2 < 0 \quad (9)$$

Equation (9) is unequivocally negative. According to experimentations with some other simple effort intensity functions, the same results were obtained. Therefore, the above example may not be a peculiar one. The example, if rather specific, shows that the increase in the social wage ratio increases the cyclical flexibility of wages rather than reduces it.

However, we should point out some caveats. In the theoretical exercise we assumed that firms promptly adjust wages to a change in labor market conditions. But available evidence suggests that firms do not promptly adjust wages.[6] If there are some costs involved with frequent wage adjustments (along "menu costs" argument), or if there are explicit or implicit long-term wage contracts, or if firms foresee business cycle conditions to change in the near future owing to the institution of counter-cyclical macroeconomic policy, firms may have incentives not to make prompt wage adjustments. When firms do not promptly adjust wages, the independent positive effect of the increase in social wages on the wage change will be still effective but its effect on the cyclical flexibility of wages will be ambiguous. The actual result will depend upon the speed of adjustment of wages to changing business cycle conditions.

This possibility for the decrease in the cyclical flexibility of wages may be higher if there is a significant asymmetry in the response of wages to business cycle conditions. The effect of an increase in social

[6]If firms fully and promptly adjust wages, the cost of job loss and hence the effort intensity move pro-cyclically: $dL/dS = w[(1-H)S(S-1)-1]/S^2 < 0$. (Note this result is quite general.) The generally counter-cyclical movement of the cost of job loss suggests that firms do not fully adjust at least in the short run. The partial adjustment is also consistent with observations that labor productivity slows down at the late expansion phase (e.g., Gordon 1979).

wages may not operate in business cycle upturns but operate in business cycle downturns. In fact, this possible asymmetry is implicit in most arguments, which focus on the role of an increase in social wages in helping workers to resist wage reductions when business cycle conditions are not favorable. For example, Clark and Summers writes: "By making unemployment more palatable, *UI* is likely to reduce the downward pressure it places on wages." (p. 316, 1982) However, it is an empirical matter whether this asymmetry holds true in practice.

The last case (which we will support) in which the changes in social wages will alter the cyclical variability of wages is when social wages (or social wage ratio) are counter-cyclical. When the duration of unemployment benefits is extended as labor market conditions worsen, the social wage ratio becomes counter-cyclical. The strongly counter-cyclical movement of social wages will obviously reduce the cyclical variability of wages. As will be shown below, social wages not only increased but also were much more counter-cyclical in the 1970s. Even if the overall increase in social wages actually increases the cyclical variability of wages as in the theoretical example, a highly counter-cyclical movement of social wages will make the opposite result appear in practice. It needs to be emphasized that in this case the counter-cyclical movement of, not the increase in, social wages is responsible for the declining cyclical variability of wages.

IV. Reexamination of Empirical Evidence

This section reexamines the empirical evidence Schor (1985b) presented on the effect of the increase in social wages on the cyclical sensitivity of wages. We reestimate the same equation as Schor's, but for two extended periods (her sample period is 1960-79): one is for 1955-79, which experienced declining cyclical variability of wages, and the other is for 1955-87, which includes the period of restoring cyclical variability of wages in the 1980s.

The wage change equation is specified as:[7]

$$DW(t) = a_0 + a_1 OUT(t) + a_2 OUT(t) * SWR(t) + a_3 SWR(t) + a_4 DP(t-1) + e(t) \tag{10}$$

[7]The terms *OUT* and *SWR* are entered contemporaneously here to ensure comparability with Schor's study. It would be more appropriate if those terms are lagged, in view of the nature of data on *W* and the possible simultaneity problem. However, we did not find any significant difference.

TABLE 2

TEST FOR THE EFFECT OF AN INCREASE IN SOCIAL WAGES

	1955-79			1955-87		
	(2-1)	(2-2)	(2-3)	(2-4)	(2-5)	(2-6)
Constant	-14.34	36.23	-17.55	-21.32	39.04	-20.95
	(-2.21)	(0.61)	(-2.60)	(-3.15)	(0.67)	(-3.05)
OUT	17.33	-34.43	18.21	24.07	-34.26	24.26
	(2.71)	(-0.59)	(2.82)	(3.61)	(-0.59)	(3.82)
OUT * *SWR*		144.73			157.19	
		(0.88)			(1.00)	
D * *OUT* * *SWR*			1.42			2.18
			(1.45)			(2.01)
SWR		-140.99	7.23		-163.59	-2.14
		(-0.84)	(0.92)		(-1.04)	(-0.36)
DP(*t* - 1)	0.63	0.61	0.49	0.61	0.71	0.58
	(9.40)	(3.71)	(3.31)	(9.57)	(7.36)	(5.82)
Adjusted R^2	0.78	0.78	0.79	0.74	0.74	0.77
S.E.	0.84	0.85	0.83	1.02	1.02	0.97
D.W.	1.42	1.33	1.22	0.76	1.01	0.87

Notes: The *SWR* is defined and constructed by Gordon (1989). The *OUT* is from Gordon (1990). The dummy *D* takes on 1 when the current *OUT* is less than that in the previous year.

The labor market condition is represented by the output ratio (*OUT*)—the ratio of actual to trend gross national product. The price inflation term is the rate of growth of the consumer price index, lagged one year.[8] The social wage ratio (*SWR*) is defined as the ratio of expected weekly income of an unemployed job loser to actual total weekly earnings. We use the comparable estimates of Gordon (1989), updated through 1987. The term *SWR* is included to capture its possible independent effect on the wage change. The interactive term *OUT* * *SWR* is intended to capture the effect of the change in the social wage ratio on the cyclical variability of wages.

If the hypothesis for the declining cyclical sensitivity of wages due to

[8]Because the estimation results are sensitive to the lag lengths, we used Akaike's final prediction error criterion, to select one-year lag as in Schor.

the increase in social wages is correct, it would imply that the interactive term is statistically significant and that the full coefficient on *OUT* from equation (10), i. e., $a_1 + a_2 SWR$, is smaller than the coefficient on *OUT* in the equation without terms involving *SWR*.

The estimates are shown in Table 2. The estimates for 1955-79 do not support the hypothesis. The interactive term is not statistically significant even at 10 percent level of significance. The full coefficient on *OUT* evaluated at the mean value of *SWR* (column 2) is 17.43, not smaller than 17.33, the value of coefficient on *OUT* in the equation without the interactive term (column 1). The estimates for the extended period of 1955-87 fare no better. Again the interactive term is not statistically significant and the full coefficient on *OUT* is not different from the coefficient on *OUT* in the equation without the interactive term. Therefore, Schor's evidence in favor of her hypothesis is a result of her particular sample period, 1960-79.

To test for the possibly asymmetrical response of wages to the increase in social wages, the following specification with a dummy variable was employed:

$$DW(t) = a_0 + a_1 OUT(t) + a_2 D * OUT(t) * SWR(t) + a_3 SWR(t) + a_4 DP(t-1) + e(t) \qquad (11)$$

$D = 1$ if $OUT(t) < OUT(t-1)$, $D = 0$ otherwise.

The estimates as shown in columns 3 and 6 do not provide support for the asymmetrical response of wages with respect to an increase in social wages. For the full sample period, the interactive term is statistically significant but has the "wrong" sign. We have performed several "sensitivity" tests (not shown here). We have tried other labor market condition variables, including the civilian unemployment rate, the unemployment rate of prime-age men, and the ratio of help-wanted advertisings to unemployment. We have also experimented with different lag structures. The results were found to be invariant to these changes and in no case we were able to confirm the alleged effect of the increase in social wages on dampening the cyclical variability of wages.

However, it may be the case that the social wage ratios used in the above results are not fully adequate estimates. Elsewhere (Shim 1991) we have argued that they are flawed in that they include most of income-maintaining social welfare benefits which affect only a minority of marginal workers and, especially, they do not fully take into account the duration of unemployment benefits. (In fact, our and Gordon's series are roughly compatible with each other through the 1970s and

diverge since then.) For a further exercise, we estimated again equations (10) and (11) with our series on the social wage ratio (not shown here). The results remained unchanged.

V. Hypothesis of Counter-cyclical Social Wages

In overall, we could not empirically confirm the hypothesis that the increase in social wages would reduce the cyclical variability of wages. What then is the relationship between social wages and the cyclical variability of wages?

Before answering this, we need to make more precise the usual meaning of the decline in the cyclical variability of wages. Suppose a simple traditional wage change equation without the terms involving *SWR*: $DW(t) = b_0 + b_1U(t \text{ or } t-1) + b_2DP(t-1) + e(t)$, where U refers to the labor market conditions. Most economists interpret the decline in b_1(in absolate value) in the traditional equation as the decline in the cyclical variability of wages.

In the third section, we have argued that the strongly counter-cyclical movement of social wages might reduce the cyclical variability of wages. Let us suppose that the true model is:

$$DW(t) = a_0 + a_1U(t \text{ or } t-1) + a_2SWR(t \text{ or } t-1) + a_3DP(t-1) + e(t) \quad (12)$$

It is econometrically obvious that estimating the traditional model will render the coefficient on U, b_1, biased toward zero (i.e., reduction in the cyclical variability of wages) if U and *SWR* are negatively related (i.e., if *SWR* is counter-cyclical). In Shim (1991), we estimated equation (12) and found that it provided a superior explanation for the wage developments in the postwar period to the traditional equation by all usual econometric standards. We are inclined to take equation (12) as the "true model".

The social wages were much higher in the 1970s owing to the institutionalization of permanent federal-state extended unemployment benefits and the relatively generous supplemental unemployment benefits during periods of severe labor market slack. These extra benefits significantly added to regular program benefits. The social wages also had a strongly counter-cyclical impetus in the 1970s mainly due to the "trigger system" which links the eligibility of extended unemployment benefits to insured unemployment rates. We suspect that the coincidence of increasing social wages and their pronounced counter-cyclical move-

TABLE 3
DEGREE OF COUNTER-CYCLICITY OF SOCIAL WAGES

	1955-88	1971-79	1981-88
Constant	0.401	0.134	0.150
	(8.77)	(1.51)	(2.17)
U	0.039	0.093	0.046
	(4.29)	(6.75)	(5.07)
Dummy * *U*, 1971-79	0.013		
	(3.12)		
Dummy * *U*, 1981-88	-0.025		
	(-5.64)		
Adjusted R^2	0.75	0.85	0.78
S.E.	0.052	0.045	0.035
D.W.	0.92	1.64	2.36

Notes: The dependent variable is the social wage ratio, defined and documented at length by Shim (1991). The *U* is the civilian unemployment rate. The first dummy takes on 1 for 1971-79. The second dummy takes on 1 for 1981-88.

ment in the 1970s may have led some observers to conclude that the increase in social wages has reduced the cyclical variability of wages.

However, the Reagan administration restructured the unemployment insurance benefits system in the early 1980s. As a result, the social wages were not only much lower but lost much of their counter-cyclical movement. This may have contributed to a revival in the cyclical variability of wages in the 1980s. Table 3 displays results from a simple regression on the degree of counter-cyclicity of our estimates of the social wage ratio during selected periods. (Our estimates somewhat control for labor market conditions such that they are counter-cyclical by their nature.) The movement of social wages roughly coincides with the changes in the cyclical variability of wages during selected periods, which may lend some support to our hypothesis.

VI. Concluding Remarks

The decline in the cyclical variability of wages caused much concern across the broad spectrum of economists. The concerns encompass

from limited roles of macroeconomic policies and plausible motives behind the prolonged recession in the early 1980s to the "abnormal" functioning of the capitalist economy and its alleged relation to the long-term stagnation.

It was hypothesized that the strongly counter-cyclical institution of unemployment benefits in the 1970s was a contributing element to the decline in the cyclical variability of wages, which was already proceeding over the postwar period. In the Reagan administration the unemployment insurance system became very restrictive and lost much of its counter-cyclical impetus. It ceased to be counter-cyclical at all due to the virtual elimination of extended unemployment benefits since 1984. It appears that this restructuring has worked to restore some of the cyclical variability of wages. It remains to be seen that the recent restoration in the cyclical variability of wages will continue and ultimately dispose of the associated concerns.

The limits of this study are obvious, however. We did not attempt a fully specified empirical investigation into the causes for the declining cyclical variability of wages. Especially deficient is that the role of stabilizing macroeconomic policies was not subjected to empirical scrutiny, leaving the possibility that our empirical equation may be misspecified. It is also an open question whether the same conclusion can be applied to many of the OECD countries which appear to have had similar experiences. Much work needs to be done about the causes of the postwar phenomenon of the declining cyclical sensitivity of wages in view of its practical importance.

References

Akaike, H. "Fitting Autoregressive Models for Prediction." *Annals of the Institute of Statistical Mathematics* 21 (1969): 243-47.

Blanchard, Olivier J. "The Wage Price Spiral." *Quarterly Journal of Economics*, (August 1986): 543-65.

Bowles, Samuel. "The Production Process in a Competitive Economy: Walrasian, Neo-Hobbesian, and Marxian Models." *American Economic Review* 75, (March 1985): 16-36.

Bowles, Samuel, and Gintis, Herbert. "The Crisis of Liberal Democratic Capitalism: The Case of the United States." *Politics and Society* 11 (1982): 51-93.

Cagan, Phillip. "Changes in the Recession Behavior of Wholesale Prices in the 1920's and Post-World War II." *Explorations in Economic Research* 2 (Winter 1975): 54-104.

Clark, Kim B., and Summers, Lawrence H. "Unemployment Insurance and Labor Market Transitions." In Martin N. Baily (ed.), *Workers, Jobs, and Inflation.* Washington: Brookings Institution, 1982.

Gordon, David M. "Documentation for SOCVARS 010: Cost of Job Loss." Mimeographed, New School for Social Research, 1989.

Gordon, Robert J. "The "End-of-Expansion" Phenomenon in Short-Run Productivity Behavior." *Brookings Papers on Economic Activity* (No. 2 1979): 447-61.

———. *Macroeconomics,* 5th ed., Glenview, IL: Scott, Foresman and Company, 1990.

Layard, R., Nickell, S., and Jackman, R. *Unemployment: Macroeconomic Performance and the Labor Market.* Oxford: Oxford University Press, 1991.

Reder, Melvin. "The Rise and Fall of Unions: The Public Sector and the Private." *Journal of Economic Perspectives* 2 (Spring 1988): 89-110.

Sachs, Jeffrey. "The Changing Cyclical Behavior of Wages and Prices: 1890-1976." *American Economic Review* 70 (March 1980): 78-90.

Shapiro, Carl, and Stiglitz, Joseph E. "Equilibrium Unemployment as a Worker Discipline Device." *American Economic Review* 74 (June 1984): 433-44.

Schor, Juliet B. "Changes in the Cyclical Pattern of Real Wages: Evidence from Nine Countries, 1955-80." *Economic Journal* 95 (June 1985): 452-68. (a)

———. "Wage Flexibility, Social Welfare Expenditures, and Monetary Restrictiveness." In Marc Jarsulic (ed.), *Money and Macro Policy.* Boston: Kluwer-Nijhoff, 1985. (b)

Shim, Jae Y. "The Worker's Fallback Position, Rate of Wage Change, and Its Cyclical Variability." Unpublished Ph.D. Dissertation, University of Massachusetts, Amherst, 1991.

Summers, Lawrence H. "Relative Wages, Efficiency Wages, and Keynesian Unemployment." *American Economic Review* 78 (May 1988): 383-8.

Taylor, John B. "Improvements in Macroeconomic Stability: The Role of Wages and Prices." In Robert J. Gordon (ed.), *The American Business Cycle: Continuity and Change.* Chicago: University of Chicago Press, 1986.

Tsuru, Tsuyoshi. "The Reserve Army Effect, Unions, and Nominal Wage Growth." *Industrial Relations* 30 (Spring 1991): 251-70.

U.S. Council of Economic Advisers. *Economic Report of the President.* Washington, D.C.: U.S. Government Printing Office, 1983.