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Wages, salaries, and the profit share: a reassessment of the evidence

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In a study of US corporate profits since World War II, Osborne and Epstein (1956) noted that the share of profits in corporate income exhibits a mixture of procyclical and countercyclical behavior. Typically, the profit share increases in procyclical fashion immediately following a recession. But after a time, while economic activity is still increasing, the profit share decreases (countercyclically); this reversal may occur a year or more before a recession sets in. Then, when the recession takes hold and economic activity decreases, the profit share also decreases, again in procyclical fashion. This mixed cyclical behaviour appears to hold for a wide variety of measures of the profit share, e.g. profit/sales, profit/national income, etc.

Four main hypotheses have been advanced to account for the declining profit share in the latter part of an expansion, a period which many refer to as 'phase B'. One hypothesis, associated primarily with Marxist economists (see, e.g., Boddy and Crotty, 1974) emphasizes the increased bargaining power of workers in phase B, when unemployment is low. This bargaining power presumably allows labour to gain a larger share of business income at the expense of the profit share. Another explanation (Sherman, 1976) emphasizes the development of inadequate consumer demand as the expansion progresses, which makes it difficult for businesses to sell at a price high enough to keep the profit share from falling. Schultze (1964) noted that capacity utilization tends to decline in the latter part of an expansion, and by increasing overhead costs per unit of output, this decline will put a downward pressure on the profit share. Finally, the role of labour hoarding in response to a tight labour market has been stressed by Burger (1973). Hoarding is equivalent to underutilizing the work force and it has the effect of reducing productivity and squeezing profits.

In a recent issue of this journal, Thomas E. Weisskopf (1979) has made an admirable attempt to evaluate the role played by three variants of Marxist crisis theory in the cyclical behaviour of the profit rate (and, as it turns out, of the profit share) in the post-War US economy. The 'rising strength of labour' (RSL) variant corresponds to the labour bargaining power hypothesis mentioned above. Another variant, 'realization failure' (RF), is manifested by a decline in capacity utilization due to inadequate demand which, *via* an overhead labour effect, can cause the profit share to decline, just as Schultze (1964) postulated. The third variant tested by Weisskopf sees the decline of the profit rate as the result of a rising capital/labour ratio coupled with a

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constant profit share. The labour hoarding phenomenon is presumably not implied by any of the Marxist variants, and hence is not tested by Weisskopf.

While the three Marxist variants differ in their explanations of the initial profit rate decline in phase B, they are equivalent in that it is this decline which is ultimately responsible for precipitating a recession. As Weisskopf (p. 341) puts it, this decline 'is bound sooner or later to discourage [new] investment', and 'will ultimately lead—*via* profit expectations and the rate of investment—to an economic crisis in which the levels and rates of growth of output and employment are depressed'.

It is undoubtedly true that a decline of the profit rate to lower and lower levels will eventually reduce investment. But the long and variable lag (from 3 to 13 quarters) between the initial decline of the profit rate in phase B and the decline of investment which accompanies the onset of a recession, indicates that investment is strongly influenced by other factors which buoy up investment in the face of a profit rate decline. Since crises may be precipitated more by a weakening of these other factors than by a decline of the profit rate, the relevance of the Marxist crisis theories to actual crises is somewhat doubtful.

Apart from testing Marxist crisis theories, Weisskopf's more important contribution is, in my opinion, his empirical analysis of changes in the profit rate and the light this analysis sheds on the behaviour of the profit share in phase B. Through an elegant system of algebraic identities, Weisskopf has devised an accounting framework whereby the rate of profit of the non-financial corporate business (NFCB) sector of the US economy is decomposed into three components which purport to measure the effects of each of the three variants on the profit rate. The main conclusion of Weisskopf's analysis is that the RSL variant, as manifested by a rise in labour's share of NFCB sector income, is primarily responsible for the decline of the profit rate in phase B.

On closer examination, there appear to be a number of conceptual and methodological problems in Weisskopf's work which put his conclusions in doubt. For example, the inventory valuation adjustment (IVA) is included in profits. It will be argued below that a study of income distribution which uses a nominal (i.e. a money-value) measure of employee income should not include the IVA in profits. The profit share decline in 1972–1973 (cycle V) is largely an IVA effect, so the appropriateness of including this adjustment in profits is more than an academic matter.

A second problem arises from Weisskopf's assumptions that only salaries have an overhead nature, and that declines in the profit share arising from a slowdown in productivity growth automatically reflect labour strength. It will be seen that factors having nothing to do with labour strength—particularly the hoarding of wage workers—may act to cause productivity to stagnate and the profit share to decline in phase B.

A third weakness in Weisskopf's work—the most serious, I believe—is the total lack of error analysis. Given the sad state of official economic statistics, particularly capacity utilization estimates, it is necessary to determine the accuracy of Weisskopf's estimates of labour strength and realization failure before his conclusions can be properly evaluated.

Given the crucial role of the profit share in the behaviour of the profit rate, and the possible importance of distribution effects on economic activity, only shares will be considered in this paper. Section I will analyse the definition of profit used in Weisskopf's study. In Section II, the precise meaning of 'labour strength' will be elucidated, and a case will be made for defining it in terms of either nominal or real (i.e. totally deflated) quantities. Following this, in Section III, a reassessment of the evidence is provided.

This takes account both of the discussion in Sections I and II and of an analysis of data measurement errors which is set out in detail in the Appendix to this paper. Section IV summarizes the findings and closes with a few speculations on the connection between growth, cyclical phenomena, and the existence of phase B.

I. Definition of profits

Weisskopf's profits are measured pre-tax, as is employee compensation; they include net interest and the inventory valuation adjustment (IVA), and exclude capital consumption allowances (CCA). The inclusion of net interest in a definition of profits is easily justifiable, for interest payments, like dividends, are payments to those who put money (and confidence) into business for the purpose of getting something more back. The effect of tax rates on profits and employee compensation is not without interest, but taxes do not appear to affect the cyclical behaviour of income shares. The remaining two items—IVA and CCA—may have cyclical characteristics which affect the profit rate, and hence a more detailed discussion of them is called for.

(a) *Capital consumption allowances*

If these allowances reflected true economic costs, their exclusion from profits would be justified. But as a result of the accelerated depreciation policies of the US Treasury, CCA is calculated from the artificially low *tax* lives of fixed assets rather than from their physical lives. In addition, some very questionable techniques, such as the perpetual inventory method and bell-shaped 'S-3 type' survivor curves, are used in the calculations. These techniques make retirements a function of earlier investments, with an age distribution of retired assets determined by the survivor curve. As a result, retirements are smoothed out in time, whereas in reality cyclical conditions may temporarily alter replacement practices so that CCA may also have a cyclical character.

In view of these problems, the safer course would have been to measure profits gross of CCA. This would tend to soften the profit rate declines in phase B, since CCA has a strong upward trend in the period of interest. But one can argue that some measure of capital consumption is better than none. Since errors in CCA are virtually impossible to quantify, its exclusion from profits will be accepted in what follows.

(b) *Inventory valuation adjustment*

The inclusion of the IVA in profits deserves careful scrutiny, since the profit rate decline in cycle V (1972.4 to 1973.3) is almost completely an IVA effect. A brief review of the origin of the IVA will prove helpful in judging its relevance to a study of income shares.

The IVA was originally invented for national income accounting purposes. The gross national product in current dollars may be calculated in two ways: either as the total of expenditures for output, or as the total of income received. By definition of the GNP, the 'change in business inventories' component on the expenditure side must reflect the *real* rather than the nominal change, with the magnitude of the change being valued in current inventory prices (i.e. average prices in the accounting period of interest). Businesses commonly value inventories at *historical* cost, i.e. in terms of the actual money spent to acquire them, and the IVA makes the necessary adjustment to current cost. But if the product side of GNP is adjusted, then the income side must be also. The required adjustment is made to profits, as follows.

The cost of consumed inventories must be subtracted from sales revenues in order to determine profits. Two conventions are commonly used to determine this cost. The 'first-in-first-out' (FIFO) convention values consumed inventories at the historical cost. The result is 'FIFO' profits, Π_{fifo}. The alternative convention values inventories at the replacement cost, i.e. the cost at the time the inventories are consumed and must be replaced. This is the 'last-in-first-out' (LIFO) convention which yields Π_{lifo}. The IVA is simply the difference between Π_{lifo} and Π_{fifo}. Or, starting with Π_{fifo} and the IVA, the inventory-valuation-adjusted profits used by Weisskopf are:

$$\Pi_{lifo} = \Pi_{fifo} + \text{IVA} \tag{1}$$

If inventory prices are increasing, replacement cost is greater than historical cost, so $\Pi_{lifo} < \Pi_{fifo}$, i.e. IVA<0. In effect, then, the IVA is a price deflator which, in inflationary periods, adjusts profits downward to account for the decreased volume of inventory which can be purchased by nominal (i.e. FIFO) profits.

Although the IVA is necessary for national income accounting purposes, its deflator property means that it should be used in studies of income distribution only if there is some compelling reason to deflate profits for inventory price changes. In this respect, advocates of the IVA often claim that profits from inventory inflation are illusory, since such profits must be totally spent on inventories if the stock of *real* inventory assets is to be kept at its previous level. Thus, unlike true income, such gains cannot be freely spent unless one is willing to reduce the real inventory stock. While this argument is valid on its own terms, it is also true that a nominal wage gain which only keeps up with inflation is illusory, since this gain must be completely spent on the basket of goods previously purchasable with the lower wage received prior to the gain if consumption is to remain at the same *real* level.

In Weisskopf's work, business income and shares in this income are calculated from nominal employee compensation, but profits include the IVA, i.e. profits are partially deflated. Inflation hurts everybody to some extent; why not partially deflate employee compensation for purchases of food, clothing and shelter and leave profits at the nominal level? Weisskopf's use of the IVA confuses real and nominal quantities, and results in an understatement of profits relative to nominal employee compensation. For fairness and consistency, the IVA should not be used in a study of presumably nominal income shares.[1]

II. Concepts of labour strength

The starting point for Weisskopf's analysis of labour strength is the income accounting relationship $Y = W + \Pi$, which defines business income, Y, as the sum of employee compensation, W, and profits, Π. Defining shares $\sigma_w = W/Y$ and $\sigma_\pi = \Pi/Y$, then:

$$\sigma_\pi = 1 - \sigma_w \tag{2}$$

This last equation shows that a rise in the labour share reduces the profit share by an equal amount. In other words, since labour and business are competing for the same

[1] Other writers have made the same point. See, for example, Kuznets (1937) (the relevant passage is the discussion by A. W. Marget and Kuznets' response); Fabricant (1958); Burkhead (1958); and Shoup (1947). All of these writers, of course, recognize the importance of the IVA for national income accounting. Fabricant suggests a refinement to the IVA whereby real gains or losses resulting from differential movements between inventory prices and the general price level would be included in profits. This suggestion, while valuable, has nothing to do with the proper measure of nominal income.

volume of money represented by business income, there is an antagonistic relationship between their shares. Weisskopf has imbued this relationship with a political content by interpreting a change in the labour share as a change in labour strength.

A refinement of the foregoing concept of labour strength involves adjusting shares for capacity utilization (φ) effects, since variations in the labour share caused by variations in φ are more a reflection of the overhead nature of certain labour costs (mostly salaries) than of the strength of labour *per se*. Weisskopf makes the adjustment in terms of 'truly required' labour, W^*, which results in the 'true' labour share, $\sigma_w^* = W^*/Y$. I find it more convenient to eliminate φ-effects by assuming that capacity is fully utilized at 100%. (Weisskopf takes full utilization at $\varphi = 0{\cdot}9$, but this is an inessential detail.) When the correction is made this way, σ_w^* is then seen to be labour's share in full-utilization business income, Z.[1] The corresponding 'true' profit share in Z, which I designate as σ_π^*, is then:

$$\sigma_\pi^* = 1 - \sigma_w^* \tag{3}$$

and again, a rise in one implies an equal decline in the other.

It is important to realize that 'labour strength' is a multi-faceted concept, which may include such diverse things as the ability of labour to command higher wages, higher real consumption, and better working conditions; and the ability to influence the government and the public to support progressive labour legislation, to enforce existing labour laws, and to protect jobs and income through economic stabilization programmes. While labour strength is best achieved through a conscious organized effort, certain economic gains, such as higher wages, can result simply from tight labour market conditions.

Given the complex nature of labour strength, it is inevitable that any single definition of it is bound to be deficient in some respects. This is particularly true of a definition in nominal terms, since it does not greatly benefit a worker to have an increase in money wages only to have the purchasing power of the increase limited, or even reduced, by inflation. So while recognizing the usefulness of σ_w^* as a measure of labour strength, it is also of great interest to define it in terms of real quantities which reflect the actual material circumstances of workers.

A meaningful measure of 'real' labour strength must reflect some benefits to labour's well-being in the form of an increased ability of the average worker to purchase more goods and services in the marketplace and/or materially to improve workplace conditions. Weisskopf arrives at a real measure in his equation (28), which I partially repeat here. Starting with σ_w^* and deflating W^* and Y by the consumer price index P_w and the deflator for NFCB domestic income P_y, we get:

$$\sigma_w^* = W^*/Y = (\bar{W}^*/\bar{Y})\,(P_w/P_y) = \bar{\sigma}_w^*(P_w/P_y) \tag{4}$$

which defines the real quantity $\bar{\sigma}_w^*$.[2] This quantity is closely related to Weisskopf's

[1] Let W_1, Y_1, and L_1 be wages (including salaries), business income, and labour hours at full utilization. Then in Weisskopf's notation, $W_1 = W_d/\varphi + W_s = W^*/\varphi$; $Y_1 = Y/\varphi = Z$; and $L_1 = L_d/\varphi + L_s = L^*/\varphi$. Upon taking the relevant ratios, we end up with Weisskopf's quantities: $\sigma_{w1} = W_1/Y_1 = W^*/Y = \sigma_w^*$; $w_1/y_1 = (W_1/L_1)/(Z/L_1) = (W^*/L^*)/(Y/L^*) = w^*/y^*$.

[2] It is tempting to interpret $\bar{\sigma}_w^*$ as labour's real share and $\bar{\sigma}_\pi^* = \bar{\Pi}/\bar{Y}$ as the real profit share. But these 'shares' are not complementary in the way that the nominal wage and profit shares are in equations (1) and (2), because whereas labour and business do compete for the same pool of money income, they do not compete for the same goods (this point is returned to in part (b) of this section). Consequently, only the impact of $\bar{\sigma}_w^*$ on the nominal profit share will be considered.

offensive labour strength, which is proportional to the logarithmic rate of change of $\bar{w}^*/\bar{y}^*$, where $\bar{w}^*=\bar{W}^*/L^*$ = true real wage, $\bar{y}^*=\bar{Y}/L^*$ = true productivity, and L^* = 'truly required' labour hours. Defensive labour strength also arises from this deflation process in the form of the price indices P_y and P_w. The task now is to determine the relevance of offensive and defensive components of σ_w^* to labour's well-being.

(a) *Offensive (real) labour strength*

$\bar{\sigma}_w^*$ appears to be closely related to labour's well-being, for the real wage $\bar{w}^*$ is a rather obvious measure of labour strength in the marketplace. But the situation with respect to $\bar{y}^*$ is not so obvious. On the one hand, a short-term[1] slow-down or decline in $\bar{y}^*$ could result from an ability of labour to improve workplace conditions; for example, a slower work pace could result from labour's ability to resist speed-up. On the other hand, an *increase* of $\bar{y}^*$ can also be connected with labour strength, for there is evidence that a 'democratization' of the production process, whereby workers participate in the planning of work, can increase productivity and at the same time improve workplace conditions (see Frieden, 1980). While the importance of work-place democracy is probably minor in the US at this time, there are two other factors which have nothing to do with labour strength but which can cause productivity to decline in phase B.

The first factor arises from the inability of the newly-hired chronically unemployed people—the 'last-hired-first-fired' set who enter the work force during phase B—to perform as productively as the more skilled, more regularly employed workers. Such a decline in $\bar{y}^*$, far from representing labour strength, is instead a failure of the entire social system (particularly the educational sector) adequately to prepare people for participation in the work force.

A second factor which may cause a slow-down of $\bar{y}^*$ in phase B is the hoarding of skilled blue-collar workers in a period of low unemployment. This hoarding arises from a management decision rather than from a strength of labour, and it need not imply anything about the workplace conditions experienced by workers, save the negative one of a more boring atmosphere accompanied by 'make work' tasks.

Since a struggle for better working conditions may have the same retarding effect on productivity as hoarding, productivity data alone cannot distinguish between the two cases. But Weisskopf has suggested (footnote, p. 354) that the φ-correction to $\bar{y}$, which assumes that only salaried workers are overhead (i.e. they are hoarded permanently) *will* account for the effect of hoarding of wage workers: '. . . one may presume that those salary earners whose labour is direct (i.e. variable) are roughly offset by those wage earners whose labour is overhead (i.e. quasi-fixed).' While this is conceivably true in phases A and C, it is most likely *not* true in phase B, where both wage and salary labour markets are tight and hoarding of both is likely to occur. Consequently, the φ-correction probably underestimates the effect of overhead (including hoarding) labour costs on the profit share.

To summarize: $\bar{w}^*$ is an obvious measure of labour strength in terms of the well-being of labour in the marketplace. But the composite quantity $\bar{\sigma}_w^*=\bar{w}^*/\bar{y}^*$ is less satisfactory due to the difficulty of distinguishing between the effects of lack of training, labour hoarding, and worker struggles on labour productivity, $\bar{y}^*$, in phase B. This difficulty represents a major impediment to understanding the profit share decline in this phase. In addition, the possible increase of $\bar{y}^*$ resulting from workplace democracy may represent an *increase* of labour strength. Given the highly ambiguous character of

[1] I am neglecting long-term changes in productivity resulting from investment in new technologies.

$\bar{y}^*$, the real quantity $\bar{\sigma}_w^*$ is a less than ideal measure of labour strength. Therefore, in what follows, real labour strength will be evaluated in terms of both Weisskopf's offensive measure, $\bar{\sigma}_w^*$, and the more significant ability of workers to 'bring home the bacon', as reflected in the real wage $\bar{w}^*$.

(b) Defensive labour strength

Weisskopf defines this concept to be $\xi(\dot{P}_y - \dot{P}_w)$, where the dots represent logarithmic derivatives (i.e. rates of change: $\dot{x} = (\mathrm{d}x/\mathrm{d}t)/x$), and $\xi = -(\dot{\sigma}_\pi/\dot{\sigma}_w)$. P_y and P_w enter Weisskopf's analysis in exactly the same way as they enter equation (4) above, i.e. by deflating σ_w^*. In terms of rates of change, equation (4) yields defensive labour strength directly (apart from the factor ξ, which is associated with $\dot{\sigma}_\pi$):

$$\dot{\sigma}_w^* - \dot{\bar{\sigma}}_w^* = \dot{P}_w - \dot{P}_y. \tag{5}$$

In Weisskopf's scheme, the condition $\dot{P}_w > \dot{P}_y$ defines a situation of increasing labour strength, because it introduces a negative term in the expression [Weisskopf's equation (41)] for the profit rate change, $\dot{\rho}$, *via* a negative change in the nominal profit share. He states (p. 357):

If the working class is able to maintain its position in the real distributional struggle by holding $\bar{w}^*/\bar{y}^*$ constant, and if it thereby shifts the burden of the adverse relative price change on to the capitalist class in the form of a higher true wage share σ_w^* (and lower profit share σ_π), labour is showing strength in protecting rather than improving its position.

This statement calls for two comments. First, $\bar{w}^*/\bar{y}^*$ does not represent the 'real distributional struggle' between labour and capital, because the latter do not complete with each other to buy the same goods. Consider, for example, a firm producing only capital goods, and using its profits to buy only capital goods. A sharp rise in P_w while capital goods prices remain constant would sharply reduce $\bar{w}^*$, but the effect on σ_π and on the real value of profits would be nil. In the more general case, some firms produce capital goods while others produce consumer goods, and both labour and business purchase goods outside the NFCB sector with the result that movements in their real values are independent to some degree. Consequently, if one deflates profits,[1] the ratios $\bar{\sigma}_w^* = \bar{W}^*/\bar{Y}$ and $\bar{\sigma}_\pi^* = \bar{\Pi}/\bar{Y}$ would not be related as the nominal shares are in equation (2).

Second, as Weisskopf's statement illustrates, the true meaning of defensive labour strength requires one to specify both σ_w^* and $\bar{\sigma}_w^*$ (i.e. $\bar{w}^*/\bar{y}^*$). Apart from some such specification, the condition $\dot{P}_w > \dot{P}_y$ by itself tells us nothing about labour strength. For example, as equation (5) shows, we can have $\dot{P}_w > \dot{P}_y$ while *both* $\dot{\sigma}_w^*$ and $\dot{\bar{\sigma}}_w^*$ are less than 0, and clearly labour does not benefit either in nominal or in real terms.

To summarize: the meaning of $\dot{P}_y - \dot{P}_w$ is, by equation (5), the difference between $\dot{\sigma}_w^*$ and $\dot{\bar{\sigma}}_w^*$. Since these latter two quantities play their own roles in Weisskopf's analysis of the nominal profit share, parsimony demands that defensive labour strength be recognized as simply the bridge between the two rather than as another variety of labour strength.[2] In what follows, defensive labour strength will be interpreted

[1] One should recognize the difficulty of deflating profits due to the difficulty of determining how profit expenditures are distributed between capital and consumer goods (and services). In addition, consumer goods purchased from profits probably do not have the same composition as the goods used to construct the Consumer Price Index.

[2] At the same time, Weisskopf is correct that $\dot{P}_y - \dot{P}_w$ is a measure of the effects on the profit share of differentials between changes of consumer and capital goods prices, and changes of consumer prices external to the NFCB sector. But equal weighting of P_w and P_k in the Weisskopf's numeraire P_y prevents the quantities ψ_k and ψ_y from clearly differentiating between these two effects.

in this way, with the main emphasis being put on $\dot{\bar{w}}^*$, $\dot{\sigma}_w^*$ and $\dot{\bar{\sigma}}_w^*$ as measures of labour strength.

III. Reassessment of the evidence

The first row of Table 1 shows $\dot{\sigma}_\pi$ for the five phase B's of interest, using profits and domestic income figures which exclude the IVA. When compared to $\dot{\sigma}_\pi$ in Weisskopf's Table 5, the main effect of this exclusion is seen to be in cycles I and V: the profit share decline is accentuated in cycle I, and greatly moderated in cycle V.

Table 1. *Rates of change of the profit share and component variables with the IVA excluded*

	(Average annual % rates of change) Cycle				
	I	II	III	IV	V
$\dot{\sigma}_\pi$	−0·1422	−0·0613	−0·1175	−0·0532	−0·0300
$\dot{\sigma}_l$	−0·1540	−0·0509	−0·1119	−0·0309	−0·0831
$\dot{\sigma}_r$	0·0118	−0·0105	−0·0055	−0·0223	0·0531
$\dot{\sigma}_{ld}$	−0·0277	0·0640	−0·0638	−0·0103	−0·0990
$-\dot{\sigma}_{lo}$	0·1262	0·1149	0·0473	−0·0092	−0·0178
$\dot{w}^{*a}$	0·0322	0·0395	0·0297	0·0295	0·0142

[a] Values of $\dot{w}^*$ in cycles I and II are reduced by 0·006 to correct for bias.

In cycles I–IV, the decline in σ_π is seen to be accompanied by a rise in nominal labour strength, $\dot{\sigma}_l = -\xi\dot{\sigma}_w^*$ (the (−)-signs indicating that this factor causes σ_π to decline). The realization factor, $\dot{\sigma}_r(=\xi\dot{\eta}_w)$, on the other hand, is appreciable only in cycles IV and V. With the exception of the negligible profit share decline in cycle V, then, the evidence in Table 1 is supportive of Weisskopf's conclusions concerning nominal profit and labour shares.

The fourth row of the table shows defensive labour strength, $\dot{\sigma}_{ld}[=\xi(\dot{p}_z-\dot{p}_w)]$. Except for cycle II, it is negative, i.e. the nominal labour share rose faster than $\dot{\bar{\sigma}}_w^*$.

The last two rows show the behaviour of two measures of real labour strength. Note the (−)-sign before $\dot{\sigma}_{lo}$ $(=\xi\dot{\bar{\sigma}}_w^*)$: it denotes that the signs of the quantities in the table reflect labour's viewpoint, i.e. a positive entry in the table signifies a gain for labour. While σ_{lo} rose strongly in cycles I and II, it showed only a moderate gain in cycle III and actually declined slightly in cycles IV and V.

The last row of Table 1 shows that the real wage—the ability to 'bring home the bacon'—rose in all cases. Weisskopf's Table 11 discloses two additional facts of interest about $\dot{\bar{w}}^*$: first, it rises in *all* phases, though very little in phase C (the recession phase); and second, it rises *faster* in phase A (recovery) than in phase B. In fact, if one calculates $\dot{\bar{w}}^*$ for the separate cycles, the discrepancy between $\dot{\bar{w}}^*$ in phases A and B is even more striking. The results are shown in Table 2. The second row shows the ratios of the $\dot{w}^*$'s in phase A to the corresponding ones in phase B. The ratios show that values of $\dot{\bar{w}}^*$ are comparable in cycles II and IV (with the phase A values higher), but in the remaining three cycles $\dot{\bar{w}}^*$ is significantly higher in phase A, particularly in cycles III and V. The ratio for cycle V certainly corresponds to the experience of many workers: Nixon's 'Phase II' price controls were removed in January, 1973, i.e. shortly after the end of phase A; the resulting explosion in prices in the following year made it difficult, if not impossible, for most workers to experience real wage gains.

The evidence on $\dot{w}^*$ in Table 2 certainly does not portray a picture of rising labour strength in phase B. Instead, it corroborates Kalecki's contention (Kalecki, 1971, p. 141) that wage increases resulting from the increased bargaining power of workers tend to be eaten away by inflation.

Table 2. *Rates of change of the real wage in phase A and comparison with phase B values*

	(Average annual % rates of change) Cycle I	II	III	IV	V
$\dot{w}^*{}_A{}^a$	0·0518	0·0468	0·0593	0·0267	0·0402
$(\dot{\bar{w}}^*)_A/(\dot{w}^*)_B$	1·61	1·18	1·96	1·26	2·83

ᵃ Values of $\dot{w}^*$ in cycles I and II are corrected for bias.

We can now turn to the effects on the analysis of considering possible errors of measurement in the data. The nature of this problem is analysed in detail in the Appendix. Here the results of the exercise are summarized in Table 3 and the values given there replace the *observed* values of Table 1. Confidence intervals are obtained by subtracting and adding *twice* the errors calculated in the Appendix (and shown there in Table A2). An assumption of a normal distribution of errors, then, I means that these are 95% confidence intervals.

Table 3. *95% confidence intervals for rate of change estimates*

	(Average annual % rates of change) Cycle I	II	III	IV	V
$\dot{\sigma}_l$	(−0·201, −0·107)	(−0·139, +0·037)	(−0·251, +0·027)	(−0·060, −0·002)	(−0·253, +0·087)
$\dot{\sigma}_r$	(−0·035, +0·059)	(−0·098, +0·077)	(−0·145, +0·134)	(−0·052, +0·007)	(−0·117, +0·223)
$\dot{\sigma}_{ld}$	(−0·057, +0·002)	(+0·027, +0·101)	(−0·102, −0·025)	(−0·077, −0·004)	(−0·146, −0·052)
$-\dot{\sigma}_{lo}$	(+0·071, +0·182)	(+0·020, +0·210)	(−0·097, +0·192)	(−0·056, +0·038)	(−0·162, +0·127)
$\dot{\bar{w}}^*$	(+0·014, +0·050)	(+0·021, +0·058)	(+0·018, +0·041)	(+0·009, +0·032)	(+0·003, +0·026)

Table 3 shows thirteen confidence intervals which do not overlap zero, i.e. there are thirteen cases where the effect of the given variable on the profit share is statistically significant at the 5% level or better. Four of these cases involve σ_{ld}, and they tell us that the differences between $\sigma_w{}^*$ and $\sigma_w{}^*$ are significant, i.e. the real and nominal measures of labour strength had different rates of change to at least a 5% level of significance.

Five of the remaining nine cases are associated with $\dot{w}^*$, and they show that it definitely tends to rise in phase B. As pointed out above, values of $\dot{w}^*$ in phase A are also positive, and the more rapid rise of $\dot{w}^*$ in phase A precludes interpreting the confidence intervals for this variable in phase B as an indication of *rising* labour strength.

Two of the remaining four statistically significant cases involve $\dot{\sigma}_l$. They show that the nominal labour share (corrected for φ-effects) impacted negatively on the nominal profit share in cycles I and IV. But only in cycle I is the effect strong; the confidence interval for $\dot{\sigma}_l$ in cycle IV comes very close to overlapping zero.

The remaining two cases show that $-\sigma_{lo}$ very likely increased in cycles I and II. Its large magnitude in both cycles compared to $\dot{\sigma}_{ld}$ (which actually buoyed up σ_π in cycle II) suggests that σ_{lo} had much to do with the profit rate declines in these two cycles. But again, one of the confidence intervals, cycle II in this case, almost overlaps zero.

The evidence thus reduces to one case, cycle I, in which nominal labour strength and Weisskopf's measure of real labour strength made solid, statistically significant advances in phase B. But this case deserves a caveat. The Korean War began in May 1950, about two quarters before the beginning of phase B in cycle I. Following this event, an explosion of prices caused profits to sky-rocket, with the profit rate reaching its post-World-War II peak in the fourth quarter of 1950 (which marks the end of cycle I's phase A; see Weisskopf's Figure 1). A purely empirical analysis shows the ensuing decline to be a result of labour strength (as defined by $\sigma_w{}^*$ and $\bar{\sigma}_w{}^*$); but it is more likely that the decline resulted from a combination of price controls instituted in early 1951 (which begins phase B) and a natural return from an unsustainable disequilibrium level.

Though the confidence intervals in Table 3 lend little credence to the RSL variant in any specific cycle, all cycles taken together do suggest that nominal labour strength may be an important, if not a determining, factor in the nominal profit rate declines in phase B. Thus, in each cycle the centre of the interval of $\dot{\sigma}_l$ is less than zero, and in cycles II–IV the intervals only slightly overlap zero. But even if σ_l does have a true impact on σ_π in phase B, the interpretation of this as a result of rising labour strength is weakened by the fact that σ_l is a very imperfect measure of such strength, as discussed above in Section II.[1]

V. Summary and conclusions

It has been argued that the IVA should not be included in profits when nominal employee compensation is used. The main effect of excluding the IVA is to accentuate the profit share decline in cycle I and to almost eliminate it in cycle V.

Labour strength can be taken simply as the nominal share of labour in business income, $\sigma_w{}^*$. But given the inflationary atmosphere of the post-War period, a real measure is also of great interest. Such a measure should reflect the well-being of labour in terms of real purchasing power and work-place conditions. One possible measure, Weisskopf's offensive labour strength, $\bar{w}^*/\bar{y}^*$, suffers from the fact that productivity, $\bar{y}^*$, is affected by a number of factors which have nothing to do with the well-being of labour. In particular, it is impossible to distinguish between the effects on productivity of a temporary hoarding of wage earners and a struggle for better work-place conditions, both of which can retard the growth of productivity. An alternative measure of

[1] σ_φ is centred below zero (but only slightly) in three of five cycles, so it too may play a role in the decline of σ_π in phase B. A stronger effect requires, of course, that φ decline more in phase B than the Federal Reserve Board's values show. In fact, there is good reason to believe that capacity, which enters into the FRB's estimates of φ, may be underestimated in phase B, thus resulting in overestimates of φ during this phase. Such an underestimate of capacity could result from use of the perpetual inventory method to determine stocks of fixed assets (which largely determine capacity). As the discussion of capital consumption allowances in Section I above pointed out, the perpetual inventory method smoothes over any cyclical characteristics of retirements of fixed assets. If labour hoarding resulting from a tight labour market is indeed a characteristic of phase B, it might be thought that capital would be hoarded too in order to prepare the firm for a sudden increase in business. If so, then the FRB's estimates of capacity utilization may be biased upward in phase B, i.e. $\dot{\sigma}_\varphi$ may really have a greater effect on the decline in $\dot{\sigma}_\pi$ than the data shows.

real labour strength is $\tilde{w}^*$, the real wage. Both measures of labour strength have been utilized to shed light on its cyclical characteristics.

An analysis of errors[1] disclosed that it is difficult to correct accurately for salary overhead effects because of the large uncertainties in capacity utilization estimates. Smaller but significant errors arise from the use of manufacturing data for the NFCB sector, and from errors in price indices.

When errors are incorporated into the analysis and 95% confidence intervals are formed, it is found that the nominal labour share, σ_w^*, adversely affects the nominal profit share in phase B in only two of five post-War cycles (I and IV). Similarly, offensive labour strength is manifested to a statistically significant degree only in cycles I and II. In cycle I, the effects of the Korean War (i.e. shortages, speculation, and belated price controls) undoubtedly played a large role in the sharp fluctuations of the profit share, so the true influence of labour strength in this case remains somewhat unclear.

Real purchasing power, $\tilde{w}^*$, shows statistically significant increases in phases A and B of all cycles. Most importantly, $\tilde{w}^*$ rises faster in phase A than in phase B. Therefore, this measure of real labour strength does not support the hypothesis that tighter labour market conditions in phase B make it easier for labour to achieve greater real gains.

I would like to close with a few somewhat speculative comments on the very existence of phase B. The ability of the economy to continue expanding with a high level of investment even though there are declines in the profit rate, profit share, and often in capacity utilization, may be the result of a long-range growth perspective on the part of the investing class, i.e. a perspective which can see beyond temporary difficulties in profitability to the longer-range benefits of growth. A hoarding of labour and capital in phase B, together with the willingness of business to keep investment at a high level, would be natural consequences of an optimistic belief in prospects for continued growth.

Insofar as phase B is that part of the cyclical pattern of the economy which may also be influenced by factors of growth, an understanding of its dynamics may shed light on what Pasinetti (1974, p. 55) calls the 'complex and intricate problem of the relation existing between economic growth and cyclical fluctuations'. Although Weisskopf and others have made significant contributions towards an understanding of phase B, the main conclusion which flows from this paper is that a spirit of open-mindedness must be kept as further efforts are made to understand this important phenomenon.

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[1] See Appendix.

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Appendix. *Error analysis*

The error analysis which follows assumes that Π, W, and Y are measured without error. (Actually the relative errors in these quantities are all less than 0·002, which will be seen to be negligible compared to other errors.) Other quantities, particularly P_w, P_y, and φ, are assumed to have errors, as do the quantities $\bar{W}$, $\bar{Y}$, $\sigma_w{}^*$, $\bar{\sigma}_w{}^*$, etc. which are derived by use of P_w, P_y, and φ.

To facilitate the analysis, it will be useful to first derive equations which express σ_w, $\bar{\sigma}_w{}^*$, defensive labour strength, the 'realization factor' σ_r (which describes the effect of changes of φ on σ_π), and $\bar{w}^*$ in terms of the following basic quantities for which official data are published by the indicated agencies of the US government:

- Y, W, Π, and P_y for the NFCB sector, published by the US Bureau of Economic Analysis;
- φ, for manufacturing by the Federal Reserve Board;
- W_{md}, W_m, L_{md}, N_m and N_{md} for manufacturing establishments by the US Bureau of the Census, where W_{md} = direct compensation of production workers; W_m = compensation of all workers; L_{md} = hours of production workers; N_m = total number of workers (i.e. production and salaried workers); N_{md} = total number of production workers; and the subscript m reminds us that this is manufacturing data;
- L, hours of all workers in the NFCB sector, and P_w, the Consumer Price Index, by the US Bureau of Labour Statistics.

From the above quantities, I define 'overhead' compensation of salary workers as $W_{mo} = W_m - W_{md}$ and following Weisskopf, the parameter r_c is W_{md}/W_{mo}. But instead of r_c, I find it more convenient to use the 'overhead compensation fraction' for manufacturing, which I define as:

$$c_{mo} = W_{mo}/W_m = 1/(1+r_c). \tag{A1}$$

Finally, the 'overhead hours ratio', h_{mo}, is defined as:

$$h_{mo} = L_{mo}/L_m = 1/(1+r_h), \tag{A2}$$

where $r_h = L_{md}/L_{mo}$, $L_m = L_{md} + L_{mo}$, and following Weisskopf, $L_{mo} = 2000(N_m - N_{md})$, i.e. each overhead (i.e. salaried) worker is assumed to work 2000 hours per year.

In terms of the basic quantities, the corresponding data for the NFCB sector is:

$$W^* = W_d + \varphi W_o = \eta_w W \tag{A3}$$

$$W_d = (1 - c_{mo})W \tag{A4}$$

$$W_o = c_{mo}W \qquad \text{and} \tag{A5}$$

$$\eta_w = W^*/W = 1 - c_{mo}(1 - \varphi) \tag{A6}$$

where W is NFCB employee compensation, and as equation (A6) shows, η_w is defined solely in terms of manufacturing quantities.

In Weisskopf's equation (41), which decomposes the rate of change of the profit rate, the terms $-\xi\dot{\sigma}_w{}^*$ and $\xi\eta_w$ are associated with $\dot{\sigma}_\pi$, and hence are of interest here. I define these two terms to be labour strength, σ_l, and the realization factor, σ_r:

$$\dot{\sigma}_l = -\xi\dot{\sigma}_w{}^* = -\xi(\dot{W} - \dot{Y} + \dot{\eta}_w) \tag{A7}$$

$$\dot{\sigma}_r = \xi\dot{\eta}_w. \tag{A8}$$

Breaking $\dot{\sigma}_t$ into offensive and defensive components, $\dot{\sigma}_{to}$ and $\dot{\sigma}_{td}$, we now express them in terms of the basic quantities:

$$\dot{\sigma}_{to} = \xi(\dot{Y} - \dot{W} + \dot{P}_w - \dot{P}_y - \dot{\eta}_w) \tag{A9}$$

$$\dot{\sigma}_{td} = \xi(\dot{P}_y - \dot{P}_w). \tag{A10}$$

Finally, $\dot{w}^*$ is:

$$\dot{w}^* = \dot{W} - \dot{L} + \dot{\eta}_w - \dot{\eta}_t - \dot{P}_w \tag{A11}$$

where:

$$\eta_t = 1 - h_{mw}(1-\varphi) \tag{A12}$$

Equations (A7)–(A12) therefore describe the realization factor and all relevant measures of labour strength in terms of official statistical data.

Since the errors in $\dot{Y}$ and $\dot{W}$ are assumed to be zero, the errors in $\dot{\sigma}_r$, $\dot{\sigma}_{to}$, and σ_{td} are (assuming no correlation between $\delta\dot{P}_y$, $\delta\dot{P}_w$, and $\delta\dot{\eta}_w$):[1]

$$\delta\dot{\sigma}_r = \xi\delta\dot{\eta}_w = -\delta\dot{\sigma}_t \tag{A13}$$

$$\delta\dot{\sigma}_{to} = \sqrt{\delta^2(\dot{P}_y - \dot{P}_w) + \delta^2\dot{\eta}_w} \tag{A14}$$

$$\delta\dot{\sigma}_{td} = \xi\delta(\dot{P}_y - \dot{P}_w) \tag{A15}$$

$$\delta\dot{w}^* = \sqrt{\delta^2(\dot{\eta}_w - \dot{\eta}_t) + \delta^2\dot{P}_w + \delta^2\dot{L}} \tag{A16}$$

The Bureau of Labour Statistics has recently made 'preliminary' estimates of the error in P_w.[2] The relative error in the rate of change $\Delta P_w/P_w$ is:

$\delta(\Delta P_w/P_w)$ = 0·0013 for one-month changes;
= 0·0023 for two-month changes;
= 0·0032 for three-month (one-quarter) changes.

Note that the sampling error rises as the interval over which the difference is measured increases. The increase per month for the last two values is 0·001. If this rate of increase persists for the change over a year's time, the error in $\Delta P_w/P_w$ would be more than 0·01. As a conservative estimate, I take $\delta(\Delta P_w/P_w)$ to be one-half this amount, i.e. 0·005, for a change over a one-year period. I will further assume that it increases linearly at this rate. Since $\dot{P}_w = (1/\Delta t)\ (\Delta P_w/P_w)$, the assumption that $\delta(\Delta P_w/P_w)$ increases linearly with time interval Δt, with a value of 0·005 for $\Delta t = 1$ year, is equivalent to assuming that $\delta\dot{P}_w$ is constant at 0·005 for all intervals:

$$\delta\dot{P}_w = 0{\cdot}005 = \text{constant}.$$

The sampling error in $\dot{P}_y$ is not known. It is bound to be larger than the error in $\dot{P}_w$, because $\dot{P}_y$ is constructed from prices of capital goods as well as consumer goods. But the NFCB sector's domestic income, Y, excludes capital consumption allowances, so that the major component in P_y is the deflator for consumer goods produced in the NFCB sector. This deflator is derived from data used to construct P_w. One might think that the errors in $\dot{P}_y$ and $\dot{P}_w$ might cancel. But P_y is a deflator while P_w is a price index, and in addition, housing costs are treated differently in the two cases. Such conceptual differences in P_y and P_w are *bona fide* errors for the purposes at hand, because ideally both indices should be measured on a consistent basis if $\dot{P}_y - \dot{P}_w$ is to reflect only differences in the list of items covered by each one. Theoretically, the error in $\dot{P}_y - \dot{P}_w$ arising from such conceptual differences could be determined by taking all the raw price data used to construct the deflator P_y, constructing a price index, P_y' from it, and then comparing $\dot{P}_y$ and $\dot{P}_y'$. An approximation to this formidable task is to compare the personal consumption expenditures deflator for the whole economy, P_{pce}, with P_w. When this is done, a random error of $\pm 0{\cdot}005$ is found between the rates of change of P_{pce} and P_w. Therefore, we take:

$$\delta(\dot{P}_y - \dot{P}_w) = 0{\cdot}005.$$

The error in $\dot{\eta}_w$ arises from a variety of sources. First, there is the error from using wage, salary, hours, and capacity utilization data from manufacturing for the NFCB sector in calculating η_w

[1] See Beers (1958) for a derivation of the error formulae.

[2] These were made available to the author by the Bureau of Labor Statistics. Although not published they are the best estimates available.

and η_{l}. Since manufacturing accounts for about 40% of the output of the NFCB sector, this portion of the error was estimated by using data from a subset of manufacturing to simulate the known data for the total manufacturing sector, with the subset accounting for about 40% of total manufacturing value added. Durable goods industries were chosen as the subset rather than a mixture of durable and non-durable ones in order to simulate the fact that the manufacturing sector is qualitatively different from other industries in the NFCB sector, such as trade, services, mining, construction, and utilities.

The remaining sources of error are connected with capacity utilization estimates. Here, two sources contribute: Weisskopf's moving average technique to smooth $\bar{Z}$ (moving averages tend to induce cyclicality into otherwise random data, and should not be used in a study of cyclical phenomena); and the measurement error in φ, as determined by comparing Federal Reserve Board, US Bureau of Economic Analysis, McGraw-Hill, and US Bureau of the Census estimates of year-end utilization estimates for the period 1973–1977 (which is the period for which Census estimates exist).

The error in η_{w} was found to be 0·016, 0·010, and 0·005 for one-, two-, and three-year changes respectively. To give an idea of the relative importance of the various error sources for one-year changes, the use of manufacturing data for the NFCB sector contributes about 0·007 to η_{w}, and measurement error contribute about 0·010. Note that these errors do not add linearly; instead, their squares add, assuming these errors are independent. This yields a combined error of 0·012. The remaining 0·004 arises from the moving average technique, accidental correlations between errors, and errors of approximation made in estimating the contributions from the separate sources.

Interpolating and extrapolating for phase B intervals between one and three years, and extrapolating for intervals outside of these limits, the values of $\delta\dot{\eta}_{w}$ shown in Table A1 for the five postwar cycles of interest are obtained:

Table A1. *Error in* η_{w}

	(Average annual % rates of change) Cycle				
	I	II	III	IV	V
t (in years, to nearest quarter)	2·50	1·75	0·75	3·25	0·75
$\delta\dot{\eta}_{w}$	0·0075	0·0120	0·0180	0·0040	0·0180

For the years 1958 and following, the error in $\dot{L}$ is taken to be the same as the relative error in average weekly hours, which the Bureau of Labour Statistics estimates to be 0·001. But prior to 1958, only rough estimates of L exist, based on 1958 ratios at the 2-digit SIC levels of NFCB hours to hours in the total (i.e. including financial) corporate economy. The error in $\dot{L}$ for earlier years could possibly be measured by using the ratios to predict L for years 1958–1976, calculating $\dot{L}$ from these predicted values, and then comparing known and predicted values. Unfortunately, this is not possible to do, because only non-financial corporate data exists after 1958. But an *overestimate* of the error can be made by calculating predicted values as the 1958 ratio of hours in the non-farm private economy.[1] When this is done, it is found that the predicted values underestimate $\dot{L}$ by about 0·006, and there is a random variation between the two of about 0·007. The downward bias reflects the fact that the ratio of NFCB hours to total hours grew during the period 1958–1976, while the use of the 1958 ratio neglects this fact. Conversely,

[1] I tended to underestimate errors which affect Weisskopf's quantities, in order to avoid prejudicing the case against the accuracy of his results. But $\dot{L}$ appears only in $\dot{w}^*$ (it cancels out in $\dot{y}^* - \dot{w}^*$). Since I am proposing $\dot{w}^*$ as a measure of labour strength, I am weakening only my own case by overestimating the error in $\dot{L}$. As will be seen this overestimate is still small compared to $\dot{w}^*$.

going back in time, we expect this ratio to decrease, i.e. stated values of L will tend to be overestimated by using the 1958 ratio. Since $\overline{w}^*$ goes as $1/L$, neglect of this trend error in the ratio will slightly underestimate $\overline{w}^*$ and $\dot{w}^*$. Therefore:

$$\begin{aligned} \text{Bias in } \dot{L} &= 0{\cdot}006 \text{ for 1949–1957} \\ \text{Bias in } \dot{L} &= 0 \text{ following 1957} \\ \delta\dot{L} &= 0{\cdot}007 \text{ for 1949–1957} \\ \delta\dot{L} &= 0{\cdot}001 \text{ following 1957.} \end{aligned}$$

The error in $\dot{\eta}_w - \dot{\eta}_l$, which occurs in $\dot{w}^*$, is only 0·003. This small value arises from the fact that c_{ms} and h_{ms} are highly correlated, and η_w and η_l each depend on φ in the same way, i.e. as $1-\varphi$. Therefore, their errors are also correlated, and tend to cancel upon subtraction.

Having calculated errors in $\dot{P}_w$, $\dot{P}_r$, $\dot{\eta}_w$, $\dot{L}$ and $\dot{\eta}_w - \dot{\eta}_l$, errors in equations (A13)–(A16) can now be calculated, and are shown in Table A2 for phase B of cycles I–V.

Table A2. *Errors in quantities influencing the profit share*

	(Average annual % rates of change) Cycle				
	I	II	III	IV	V
ξ^a	2·948	3·655	3·867	3·667	4·717
$\delta\dot{\sigma}_r$	0·0236	0·0439	0·0696	0·0147	0·0849
$\delta\dot{\sigma}_l$[b]	0·0236	0·0439	0·0696	0·0147	0·0849
$\delta\dot{\sigma}_{lo}$	0·0278	0·0475	0·0722	0·0235	0·0722
$\delta\dot{\sigma}_{ld}$	0·0147	0·0183	0·0193	0·0183	0·0236
$\delta\dot{w}^*$	0·0091	0·0091	0·0058	0·0058	0·0058
Bias in $\dot{w}^*$	−0·006	−0·006	0	0	0

[a] The ξ-values shown in this table are calculated from values of Π which *exclude* the IVA.

[b] As equation (A13) shows, $\delta\dot{\sigma}_r = -\delta\dot{\sigma}_l$. Here, we are only concerned with the magnitudes of errors, so we disregard the sign difference between rows 2 and 3.

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