Monopsony and "Shock" Arguments for Minimum Wages*

The conventional neo-classical model in economics, at least in the partial equilibrium version, predicts that the introduction of a legal minimum wage, or an increase in the minimum, will cause disemployment [23]. The institutionalist school of labor economists traditionally emphasize two opposing arguments: First, that where the employer has labor market power (monopsony) it is possible that the minimum wage will *increase* employment; second, that minimum wages can affect productivity to such a favorable extent as to offset the disemployment effects of minimum wages in competitive labor markets. The purpose of this paper is to subject both arguments to more critical scrutiny than is usually given by economic theorists. We must emphasize however that we are not here attempting a full scale review of all the arguments for and against minimum wages. Our task is to focus on the above two arguments exclusively.

The Monopsony Argument

The typical reaction of the 'neo-classical' economist to the monopsony argument [5; 6], has been to emphasize that the occupations most affected by minimum wage legislation are in fact not monopsonistic but competitive. This is so even from casual inspection of the low income jobs that experience the greatest impact. These include textile and clothing workers, barbers, waitresses, laundry workers, beauty parlour employees, sales clerks in retail stores and students. Such workers are employed by such large numbers of firms that it is difficult for them to collude [23].

A more scientific test of the presence or absence of competition in the labour market is the conformity of the evidence with the prediction of the relevant model. The presence of any systematic evidence showing *expansion* in employment following minimum wage revisions would be required to support monopsony as a *general* labour market circumstance. Although familiar in basic outline to most readers, a brief review of the monopsony model will enable us to establish some of the minimum wage analysis with the necessary precision.

Whereas in a competitive labour market the marginal wage is equal to the average wage, and both appear in the traditional geometry as the same horizontal line, in the case of monopsony, shown in Figure 1, they each slope upwards, and at different rates. The slope of the marginal wage (MW) is steeper than the average (AW) because if the firm wants to obtain more labor it has to raise wages, not only for the additional workers but also for the existing ones. Maximization of profits occurs when MW is equal to the marginal revenue product of labor (MRP). In Figure 1 therefore the equilibrium position is where OA men are employed at a wage of OW.

If a relatively 'low' minimum wage of OW' is legally imposed on this firm exclusively

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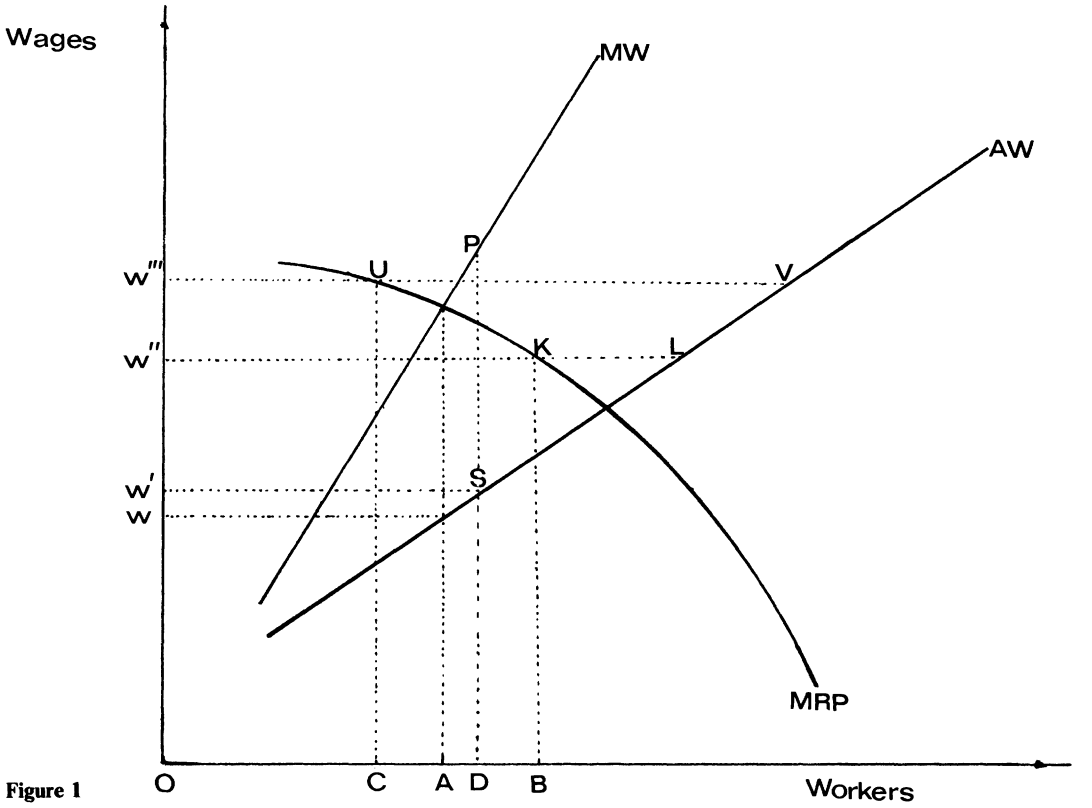

Figure 1

(partial coverage), the supply curve will be *W'SAW*. The marginal and average are now equal up to point *S* since over this range the same *OW'* has to be paid however many are employed. At this relatively low minimum the firm would want to employ the quantity associated with the point *S*. Note that the old *MW* curve resumes at point *S* at the point *P* immediately above it (there is a vertical discontinuity). This first minimum wage *OW'*, therefore, causes an increase of employment (of *AD*). There is no *unemployment* because *OD* workers would be supplied, as well as demanded, at this wage.

If the minimum were set higher, at *W''*, there will again be increased employment (at *OB*) compared to the *OA* of the unregulated monopsony solution. This time however *unemployment* will occur in the sense of an excess of labor supply over labor demand (*KL*).

Finally, a still higher wage of *W'''* would lead to *disemployment* (of *CA*) and unemployment (in the above sense) represented by the gap *UV*. So much for the classroom example.

Considering that models should be falsifiable, the question now arises with what evidence can we test for the possible situations in Figure 1. Clearly the monopsony model, as outlined, is consistent with a variety of outcomes. At wage *OW'* there is an unambiguous expansion of employment (from the original monopsony level of *OA*) and no unemployment. This would be a favourable effect. But at a minimum wage of *OW''* there is both increased employment (more jobs) and unemployment (consisting of the excess supply of labor of *KL*). At the higher minimum wage of *W'''* meanwhile the prediction is the same as the competitive model: an unambiguous loss of jobs (here *CA*) and unemployment. Clearly a crucial variable in testing whether actual minimum wages have *favourable* effects is the number of extra jobs created (the impact on *employment*).

The model can thus be used scientifically, that is that can be directly tested empirically.

If the evidence shows that minimum wages, or increases in them, are followed by a *reduction* of employment (or a failure to increase it), then the monopsony model will not have been supported. (The competitive model meanwhile will not have been refuted.) Conversely, if the evidence shows that significant employment *expansion* follows minimum wages, or increases in them, there would be supporting testimony for the presence of monopsony.

Both econometric and non-econometric (or survey) evidence is available. Our preference, like that of most economists, is for econometric work. Accordingly we report in Table I

Table I. Survey of Employment Effects of Minimum Wage Revisions

Author (Date)	Employment Increased	No Significant Effect	Significant Reduction in Employment
Kaitz (1970)		*	*
Kosters and Welch (1972)			*
Katz (1973)			*
King (1974)			*
Welch (1974)			*
Kelly (1976)		*	*
Mincer (1976)			*
Gramlich (1976)		*	*
Siskind (1977)		*	
Welch (1977)			*
Ragan (1977)			*
Welch and Cunningham (1978)			*
Swidinsky (1978) (Canadian)			*

1. Table I relates to effects on employment. Figures of unemployment are ambiguous because they are influenced by both the participation rate and the demand for labor. Thus we have not included those studies which report unemployment effects only. Such studies included Adie [1], and Moore [21]. They found significant adverse impact; Kaitz [13] and Lovell [19] using a similar measure, found no adverse impact.

2. Kaitz [13] studied both the employment and unemployment effects. We have omitted his result concerning unemployment (see note 1), but have included his employment results because these are less ambiguous. We have ignored the result of Kaitz's study using annual data.

3. Details of Results:

Kaitz—found the employment effect to be negative and significant for whites except females 18–19 (not significant) and insignificant for nonwhites except males 18–19 (positive and significant).

Kelly—employment effect is negative and significant in three of four cases—insignificant and positive in the fourth.

Gramlich—teenagers experienced a reduction in full-time and an increase in part-time employment; adult females experienced a gain in full-time employment; adult males experienced a reduction in both full and part-time employment.

Ragan—employment impact was negative and generally significant for teenage males; mixed but largely insignificant effects for teenage females.

4. Siskind's results are presented in a comment to Welch's [29] work, in which he argues that Welch erred in his use of unpublished B.L.S. data. Siskind reworked Welch's study with the corrected data and argues that Welch's finding of a significant disemployment are disproved. Welch [30], responsed by performing his own re-estimation by industry class and supports his view that minimum wages cause adverse employment effects.

the available econometric studies of the employment effects of minimum wages. We have excluded from the table those studies measuring exclusively the effects on *unemployment* because they are often ambiguous. Thus for instance the positive employment effect (AB) of the minimum wage W'' is the key point in identifying monopsony.

Nine of the thirteen studies report unambiguous and significant reductions in employment. One finds no significant effects, three show mixed results, while none reports significant increases in employment. By "mixed results" we mean significant disemployment was found for some groups investigated and insignificant disemployment for others. Typically the former outnumbered the latter. We discuss them in detail in the notes to Table I.

We conclude that the monopsony model is not supported by the available evidence. Such testing therefore provides analytical systematic empirical support to the argument of casual appeal to descriptive facts mentioned at the beginning. Such facts reveal that minimum wages mostly affect small scale firms where competition for the *product* is clearly predominant. It is interesting that Joan Robinson, the inventor of the term 'monopsony' acknowledged the same point: "The most important cases of monopsony will occur in connection with monopoly" [24, 227].

The evidence presented in Table I does not strictly refute the existence of monopsony power in the labor market. It is possible that the minimum wage revisions have been too large for 'optimum' counterbalancing of monopsony situations. Thus where the minimum is raised to OW''' in Figure 1, the model predicts the same as the competitive model—a decrease in jobs. Here the decrease is from OA to OC. The fact remains, meanwhile, that policy makers do not have post-1970 econometric evidence to support the existence of monopsonistic labor markets.

One further observation on the analysis will be helpful. In our models we have assumed that long run labor supply schedules (curves labelled AW) are upward sloping. This is consistent with what is called "the encouraged worker effect" where the size of the labor force (the participation rate) varies positively with the wage rate. Insofar as high minimum wages affect workers' expectations in a certain way, the fuller theory allows for the possibility of "*discouraged* worker effects". These in fact appear to account for a considerable amount of the disemployment that occurs after minimum wage legislation [20]. Geometrically the discouraged worker effect would show up as a leftward shift in both the MW and AW curves following an imposition of, or an increase in, the minimum wage.

The "Shock Theory" Argument

With respect to the "shock theory" to support minimum wages, some writers appear to interpret the "shock" to be simply an encouragement to management to employ more capital. But it is not clear why, in partial equilibrium analysis, there is a need for such a special term to describe this consequence. For it is predictable from conventional economic theory [23, 69 and 83] as an ordinary case of long-fun factor substitution following a change in relative factor prices.

The more 'legitimate' variant of the shock theory does more than predict simple substitution into capital (in the static sense of a movement along a given isoquant). In this case, the shock results in an upward shift in the productivity of *all* factors. In the extreme terms of analysis, the introduction of the minimum wage could, by itself, lead to a larger output being obtained from a given set of inputs (a jump to a higher isoquant). One of the most common

reasons offered is that, to the extent that management was not fully extended previously, the better supervision and control of workers can induce higher productivity.

Rees agrees that a large initial wage increase "could well inspire management to re-examine its methods and procedures with some care." However, "It is much harder to imagine repeated waves of successful innovation in response to annual wage increases . . . Such negotiated wage increases will themselves become routine, and a complacent organisation can deal inefficiently with them as well as with other aspects of its activity" [23, 83].

West [31] observed that the alleged shock stimulus boils down to an "artificial" rise in any input cost. On this logic other government policies, such as a discriminatory tax on profits or raw materials could accomplish the same task. West also maintains that, where there is competition, firms are always subject to the "natural" shocks of lowered costs from new entrants. It is interesting, meanwhile, that the argument that the "shock" of continual squeezes on profits will provoke managers into recovering (cost cutting) action, is in direct contrast to the usual government case for tariffs to protect against foreign competition. The case of textiles and clothing industries are good examples. These industries consist of many small firms and employ a considerable number of workers at the minimum wage. If one argues that protection is needed against the shock of overseas competition, it is difficult to hold that the shock of increased labor costs is simultaneously beneficial and 'self-correcting.'

Consider next the proposition that shocks may be effective in the presence of what Professor Harvey Leibenstein has called "*X*-inefficiency." Although this particular argument has not so far appeared in the minimum wage literature, it seems to be implicit in many of the prevailing versions of the "shock theory" of minimum wages.

In his most recent writing, Leibenstein [18, 328] has described as follows, "the basic proposition" of his theory:

> Suppose a multiperson firm is given the following option: to produce *X*-units for which it is offered successively larger budgets B_0, $B_1 \ldots$, B (B_0, $B_1 \ldots B$) plus a *fixed profit*. The firm is free to return any portion of the budget. What size budget will it choose? What happens to cost per unit as B increases? I believe that the best answer is that the firm would probably choose B, and cost per unit will increase in proportion to the increase in B. There is no benefit to returning any of the budget. Keeping it gives firm members more elbow room, since it would allow them to choose to work less hard or harder, give less attention to details or more attention, choose their own good time, rather than to feel pressured by time, etc. . . We would not expect such a firm to minimise cost per unit; that is to choose the lowest possible budget.

In the present context we would want to know whether those organizations that receive the most impact from minimum wage laws fit the above picture of high cost firms where *X*-inefficiency is present. Leibenstein appears to supply an important answer in his next sentence. "This suggests that under parallel circumstances firms will not minimise costs for a given output *unless competition or environmental elements force them to do so.*" (Our italics.) We have already cited consensus in the literature that, descriptively, the firms most affected by minimum wages typically operate under strong competition, and we have shown that this is not refuted by the evidence. The relevance of "*X*-inefficiency argument" to the shock theory of minimum wages would therefore appear to be minimal.

In his concluding remarks, Leibenstein [18, 332] suggests more specifically where his theory might be applied:

1) In the case of regulated monopolies.
2). The nonprivate sector, where adding funds need not add output proportionally, or add output at all.

3) Health services under a health insurance scheme.
4) Municipal services, where the passing on of costs to the taxpayer may yield very high costs per unit of service.

As already explained, the first category does not typify the minimum wage intensive sectors. Similarly, the non-private sectors, numbers 2 and 4, employ only a small proportion of workers at the minimum wage. Apart from this it is not clear that the shock of a minimum wage or an increase in the minimum would automatically result in cost reductions. For in the nonprivate sectors it is difficult to speak of a 'profit motive' and organizations are not allowed to go bankrupt. With respect to number 3, Leibenstein explains that in this category "managers of 'health firms' simply pass on higher costs to insurees." But if this is so then presumably they will also pass on the cost of higher minimum wages and be immune to any pressure to improve efficiency.

Institutionalist participants in minimum wage discussion appear often to find difficulty in accepting that many firms in a competitive industry are operating efficiently when they are experiencing what is believed to be subnormal profits, high labor costs as a proportion of total costs, unskilled workers and smaller-than-average size. There seems, however, to be no method of obtaining a measure of normal and subnormal profits except by observing the profits of those competitive firms who survive. So either the firms in question are in process of leaving the market, in which case the market "shocks" are already "weeding out" the inefficient, or, if the firms are managing to survive then, by definition, they are earning at least normal profits. Neither is it permissible to argue that a firm is inefficient if it is "below average size." or above average in labor intensity. Only if entrepreneurs and workers were homogeneous could we expect one optimum size and *one* common degree of labor intensity.

The liquidation of some firms after a minimum wage introduction (or increase) is not automatic proof, therefore, of the success of the shock theory. Before the introduction of the minimum wage, the firms in question may have been paying higher than the minimum for superior labor. "The minimum wage would then raise wages in the low-wage market without improving the quality of its labor. If the firms in question had been competing on even terms before the minimum wage laws, they would now be at a disadvantage and might have to move out of the local labor market or go out of business' [23, 68].

The "shock theory," in general terms, reduces to the proposition that if factor B is allowed to squeeze the rewards of co-operant factor A, the latter will be 'prodded' into greater efficiency. It is not obvious, however, that the proposition is irreversible—that is, that it could not be written so as to present factor A as the "squeezer" of B's income, and this also in the pursuit of greater productivity. If this is the case, the ultimate policy implications might be ambiguous.

Dhruvarajan [8] argues that a minimum wage establishment, or increase, may have the consequence that "labor may be motivated into working harder for fear of being laid off if their productivity did not increase; the increased wages may provide the employer with the basis for insisting on greater efficiency from his employee." One's reaction to this argument depends on the purpose of the minimum wage law. If it's simply to raise money wages the argument is consistent. If it is to raise the workers welfare (utility) it is ambiguous because the extra utility obtained from higher money wages may be offset by the disutility caused by the new 'fear'.

A clearer argument suggesting how improved "motivation" of workers might be effected, goes back to the nineteenth century "high-wage economy theory" of Sidney and Bea-

trice Webb, outlined in their book *Industrial Democracy* [27]. This theory, in effect, reversed the usual functional relationships between wages and productivity. Whereas the marginal product theory now argues that wages are a function of the marginal product ($w = f(MP_N)$), instead the marginal product of workers was argued by the Webbs to be a direct function of wages $MP_N = f(w)$. The argument was that wage increases improved labor productivity by allowing workers to be healthier, happier, and better fed. Conversely, a wage decrease would lower workers' efficiency [28].

But even if the Webbs's theory is valid, it does not amount to a case of unambiguous aid to poor workers. Some will be made worse off. Consider Figure 2. The original wage is W and the numbers employed OA. A legislated minimum wage of W' would cause a contraction along demand curve aa such that CA are dismissed. The result is the emergence of two groups. Those within OC who enjoy the increase wage of OW' and those to the right of C who suffer a fall in income. After a lag, the former group will, according to the high-wage economy theory, increase their productivity. This is illustrated in Figure 2 with the demand curve *bb*. With this increased demand curve, the favoured workers will eventually enjoy a wage higher than W' because of competition between employers for a restricted amount (OC) of more efficient workers. The dismissed workers CA will presumably be even less productive than they were originally, since they will have experienced unemployment or a move to still lower paid occupations [3].

It is now believed [23, 80; 12, 97] that the theory that higher wages increase productivity could only apply realistically to undeveloped economies. In developed economies, increased wages after a point could have tendencies in either direction. "At first, indeed, while he is becoming accustomed to a new standard of living, much of the increase may be 'wasted' spent upon commodities with a merely meretricious attraction . . .", [12, 209]. To describe these commodities as 'meretricious' no doubt involves a value judgment. But insofar as they are talking of non-food, non-clothing and non-shelter items, such authors appear to be arguing that if wage increases are spent on these they are less likely to be relevant in raising productivity. Clearly this is an empirical matter calling for careful investigation.

In one sense Webb's theory of increased labor output following increased inputs into the quality of labor itself, translates into the modern idea of an investment in human capital. But then the question arises, why, if such investment pays off, employers themselves will not take the initiative to increase wages sufficiently to obtain the necessary investment; for the investment will have favourable repercussions on profit. Becker [2], argues that in some circumstances and where skills are firm specific this could occur. One should note that insofar as firms compete for *potential* trainees there is no monopsonistic exploitation. The situation is more akin to a bilateral monopoly. Employers and workers will share in investment costs. And although the ultimate wage will not be precisely determinate it will exceed alternative wages elsewhere.

Feldstein has argued that, under the right circumstances, and even in competitive product and labour market conditions, workers of very low incomes will be led to invest in their own human capital so as to increase their marginal productivities. But the circumstances when this result is *least* likely are those in which governments have intervened to fix a minimum wage. Because of minimum wage laws firms cannot afford to offer useful on-the-job training to a broad class of young employees. "A firm can generally provide the opportunity to acquire new marketing skills—by on-the-job training, detailed supervision, or even just through learning by experience—only to a worker whose net product during the period of training is at least equal to his wage" [9, 22].

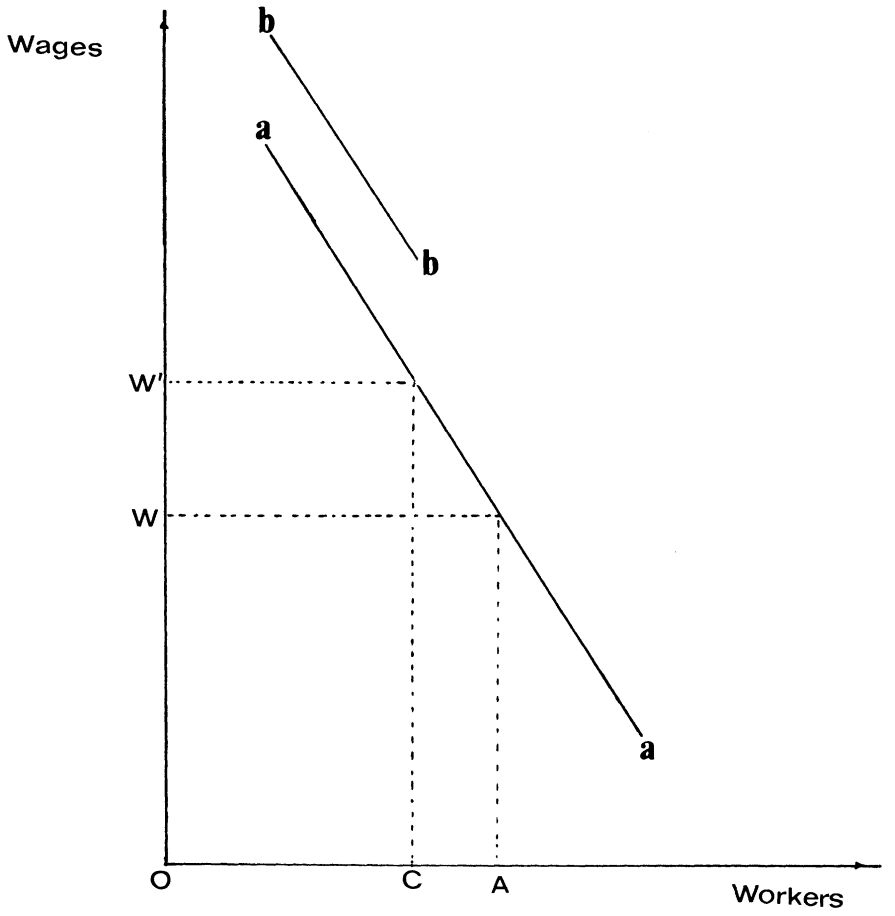

Figure 2

III. Conclusion

We conclude that although it is theoretically possible for the introduction of, or increase in, the minimum wage to expand, or leave unaffected, the number of jobs available, the consensus of published econometric evidence down to 1979 testifies to the opposite (i.e. significant disemployment). Of the two theoretical arguments examined, the monopsony model continues to receive prominent attention in current economics textbooks in the context of what a minimum wage could possibly do. The time is apparently overdue for a restructuring of such literature so as to be more interpretative of the real world. This is to say not that monopsony will never be found in reality, but only that the evidence does not show it to exist in the type of low wage employment that receives the full impact of minimum wage laws.

With respect to the second argument, the shock theory, we conclude that those versions of it that predict that *all* workers will benefit from the shock of the minimum wage are also not supported by the evidence. Because the evidence demonstrates disemployment it cannot be true that the effect of the minimum wage is to make management so efficient as to improve *every* worker's productivity. The earlier version of the shock theory espoused by the Webbs is more difficult to test by the econometric evidence since it is compatible with dis-

employment. But then the argument for the minimum wage becomes one of helping some low workers at the expense of some others.

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