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COMMUNICATIONS

Marginalism, Minimum Wages, and Labor Markets

EDITOR'S NOTE—At the suggestion of the editor, Professor Lester combined a reply to the criticisms of Professor Machlup in the latter's article, "Marginal Analysis and Empirical Research" (*American Economic Review*, September, 1946) with an originally separate comment upon Professor Stigler's article, "The Economics of Minimum Wages" (*American Economic Review*, June, 1946). Rejoinders by Professor Machlup and Professor Stigler follow Professor Lester's statement.

Two recent papers[1] in the *Review* raise the question whether marginalism suffers more from its admirers or its critics. Professor Machlup's admissions and inclusions leave the doctrine weak and distended. Professor Stigler's strict application of "pecuniary" marginalism to the labor market, for which it is ill suited, exposes it to further discredit. Comment will be made first on Professor Machlup's paper, which embodies criticisms of my article in the March issue of the *Review*.[2]

I

Professor Machlup recognizes that marginal analysis of the single firm can rightly rest only on business men's "subjective estimates, guesses and hunches"[3] as to cost and revenue, emphasizes that historical antecedents are important "in the determination of product, output, employment, and prices,"[4] states that "it is not impossible that [non-pecuniary] considerations [operating independent of the principle of maximization of money profits] substantially weaken the forces believed to be at work on the basis of a strictly pecuniary marginal calculus,"[5] and admits that "we do not know" how much "possibly important qualifications" may modify the results of marginal analysis of the single firm.[6] Unfortunately such admissions and confessions of ignorance seem to be conveniently forgotten throughout most of the remainder of his paper beginning with "B. Marginal Productivity and Cost of Input," except for the following statement:

[1] Fritz Machlup, "Marginal Analysis and Empirical Research," Vol. XXXVI, No. 4, Pt. 1 (Sept., 1946), pp. 519–54 and George J. Stigler, "The Economics of Minimum Wage Legislation," Vol. XXXVI, No. 3 (June, 1946), pp. 358–65.

[2] Comment on Professor Stigler's paper was in a preliminary stage and mentioned to the editor of the *Review* prior to receipt of any word of Professor Machlup's paper.

[3] *American Economic Review*, Vol. XXXVI, No. 4, Pt. 1, p. 522.

[4] *Ibid.*, p. 521.

[5] *Ibid.*, p. 527. *Cf.* also p. 533.

[6] *Ibid.*, pp. 527–28. *Cf.* also p. 520.

"But nobody, to my knowledge, has ever undertaken to construct from actual data a marginal net revenue productivity curve for a given type of labor employed by a firm. The difficulties are too formidable and since the raw material for the calculations could not come from any records or documents but merely from respondent's guesses of a purely hypothetical nature, the results might not be much more 'authentic' than the schedules made up by textbook writers for arithmetical illustrations."[7]

Professor Machlup points out that marginalist theory "has developed gradually over a period of more than a century."[8] During much of the past half century it has flourished throughout the Western world. Yet, strangely enough, Professor Machlup points to no systematic investigation that supports the validity of marginalism in the field of modern manufacture. His paper consists merely of assumptions, presumptions, theorist's contentions, possibilities, statements of need for investigation, analogies to driving and parking automobiles, and criticisms of the empirical research carried on by others.

In criticizing the methods, interpretations, and results of others, Professor Machlup offers as "the only possibility for a fruitful empirical inquiry" use of "the more subtle technique of analyzing a series of single business decisions through close personal contact with those responsible for the decisions."[9] Seemingly the interviewer would have to be present at the very time each decision is made as Professor Machlup distrusts general replies or answers from memory.[10] In view of what he says about business men deciding by "guesses" and "hunches" and replying to question by "rationalizations,"[11] the interviewer presumably would have to be a combination Machlupian marginalist and psychoanalyst of the proper school in order to make certain that he would correctly "disentangle actual from imaginary reasons" and "separate relevant from irrelevant data."[12] The result would be unverifiable material of the most questionable character.

That my methods and data were crude and imperfect I readily admit. Indeed, I did so, stating that some of my material could be attacked on a number of the grounds that Professor Machlup details.[13] My methods, however, had the advantage of providing data directly from business executives, unscreened and unrefined by the "ingenuity" of a "subtle" analyst, and everything I did was out in the open. The executives were simply asked for factual material (*e.g.*, on unit costs, labor-to-machinery mix, etc.), or the relative importance of different factors in the firm's employment, or the adjustments the firm would make to a given change. The questions did not deal with motives; hypothetical situations were included; the experi-

[7] *Ibid.*, pp. 547–48.

[8] *Ibid.*, p. 520.

[9] *Ibid.*, p. 538, footnote 23 and text to which the footnote refers.

[10] *Ibid.*, pp. 537 and 544.

[11] *Ibid.*, p. 537.

[12] *Ibid.*, p. 538.

[13] *Cf.*, for example, p. 81, "Shortcomings of Marginal Analysis for Wage-Employment Problems, *American Economic Review*, Vol. XXXVI, No. 1 (Mar., 1946).

ment could be repeated with any desired modifications; the questionnaire contained cross-checks; and various parts of the two questionnaires afforded a broad, many-sided basis for conclusions. Substantiating data in other studies were also cited. Professor Machlup's critical comments are directed at one questionnaire, although he mistakenly thinks that he is dealing with three questionnaires, which may help to explain why so much of his criticism miscarries.[14]

Piecemeal criticism of the one questionnaire, question by question, not only misses the over-all, composite results but is unfair where one question is criticized for not providing the type of test embodied in one or more of the succeeding questions to which the same group of firms replied. For example, Professor Machlup criticizes the first question for not asking for "the effects of variations of each factor separately while the others remain unchanged."[15] That was done in one of the succeeding questions where a wage increase narrowing the firm's Southern differential for comparable jobs by 50 per cent relative to the wage rates paid by its Northern competitors was postulated. To that question Professor Machlup comments that part of the results support marginalist contentions (neglecting to mention that a significant part is contrary to such contentions) and that the answers "may not mean much."[16] Throughout most of his paper he insists that the relevant data about a firm's costs are not what objective investigation might reveal them to be but what the business executive making decisions in the firm thinks they are. When, however, such executives specifically indicated exactly how they thought their unit variable costs varied with output, Professor Machlup remarks that the results are "somewhat questionable" because they fail to conform to his presuppositions.[17] The chameleon-like character of his criticisms is perhaps understandable if one bears in mind his dogged insistence that "the only possibility for fruitful empirical inquiry" into the validity of marginalism is the method already commented upon which he himself suggested in an article published in the *Review* in 1939.

The basic issue betwen Professor Machlup and me can be simply stated. According to Professor Machlup, "the business man" in deciding "how

[14] Professor Machlup repeatedly refers to "questionnaires" when only one questionnaire is involved and uses the following headings for his discussion: "Questionnaire on Employment," "Questionnaire on Variable Costs," and "Questionnaire on Adjustments," whereas actually his comments are only on parts of one questionnaire.

It is rather disconcerting to find Professor Machlup implying that I said some things that actually I did not say. To cite only the first of numerous instances of misrepresentation, compare the text to which Machlup's footnote 6 on p. 524 refers and p. 181 of my *Economics of Labor* (1941).

[15] *American Economic Review*, Vol. XXXVI, No. 4, Pt. 1, p. 549.

[16] *Ibid.*, p. 553.

[17] *Ibid.*, p. 551. In stating that the business men's answers are "somewhat questionable," Professor Machlup implies that all of them should have answered the question on the basis of continuous utilization of equipment for 24 hours a day, which completely overlooks necessary differences in shift schedules for such reasons as the nature of the business, the location of the firm, and the attitude of employees. Comment on the matter of "plant capacity" is contained in footnote 19.

many to employ" does so according to the principle of equating "marginal net revenue productivity and marginal factor [labor] cost." The business man "would simply rely on his sense or his 'feel' of the situation"; he "would 'just know,' in a vague and rough way, whether or not it would pay him to hire more men" or to lay off some workers.[18] In his numerous statements of this "principle," which he claims is the basis of company employment policy, Professor Machlup makes no reference to his preceding admissions concerning the possible importance of historical antecedents, "non-pecuniary considerations," etc.

My position is that variations in the total volume of employment in a modern manufacturing plant already constructed are primarily the result of actual and anticipated changes in the volume of sales or orders for the products of the plant and that employers, for such reasons as those I gave, do not think or act in the labor market in terms of equating marginal net revenue productivity and marginal labor cost. As my data indicated, employers generally seem to believe that unit variable cost (and, judging from numerous interviews, particularly unit labor cost) increases significantly as the scale of operations of a plant declines from 100 per cent of plant capacity, but, I contend, the alterations in unit labor cost (and presumably marginal labor cost) that accompany decreases in the rate of plant operation do not themselves cause, or result in, any change in plant employment. And changes in the scale of plant operations can hardly be explained by marginalism where, say, product prices and demand elasticities remain unchanged with variations in actual or anticipated demand and the plant operates under declining unit variable costs up to 100 per cent capacity.

Data I presented in my paper indicated that Southern business executives in highly competitive industries believed that their unit variable costs increased considerably with a drop in the scale of operations of the plant from 100 per cent to 70 per cent of plant capacity.[19] For all 33 firms the increase averaged about 25 per cent and for a number of firms it was 35 per cent or more. If business men think that their unit variable costs (to say nothing of their overhead costs per unit) change in that fashion, I submit that it is extremely difficult to explain both the wide variations that occur in the scale of plant operations and the size of the average deviation from 100 per cent plant capacity that occurs over say a decade (especially in plants producing articles not carrying the producer's brand names) on the assumption that business men adjust their rate of operations according to the principle of maximizing money profits by equating "marginal net revenue productivity" and "marginal factor cost" over the long or short run. Such data, I contend, indicate that, on the contrary, the volume of

[18] *Ibid.*, p. 535.

[19] Plant capacity was not defined, and definition was not necessary for the purposes I had in mind. Professor Machlup apparently misses the point in complaining that I should have utilized one of the different definitions of capacity used by economic theorists. Actually most of the business men I have talked with seem to think of plant capacity as the maximum daily or weekly output that can be obtained with existing equipment and a "full crew" of workers under the regular shift schedule. Use of one of the definitions Professor Machlup suggests would only have been confusing and fruitless.

output and employment in the individual firm generally varies simply and directly with the volume of present and prospective demand for products of the plant. (Note that throughout this paper the discussion is in terms of modern manufacturing plants already equipped and not in terms of simple, handicraft operations or agriculture, which constitute the basis for so much marginalist reasoning.)

Let us take some examples based on actual experience in industry. Many firms have raised their wage rates by 10 or 15 per cent for purely local reasons—such as the location of a new high-wage plant in the same small community, the threat of union organization in the plant, negotiation of the first union contract following organization, etc.—that have no effect on all the other plants in the industry. Under the circumstances, the firm generally can be fairly certain (at least that was true up to 1946 in Southern plants in the industries to be mentioned) that such an independent wage increase would mean, usually for many years and often indefinitely, an increase of approximately that amount in its wage level relative to the scales of wages paid by practically all of its competitors. Suppose, as has frequently been the case, the company so affected is a Southern cotton mill spinning yarn for sale to weaving mills or weaving cloth for the grey goods market, or a full-fashioned hosiery mill in the South making hosiery for the grey goods market. All the products are undyed, unbleached, unbranded, standard items in a highly competitive industry characterized by large numbers of small firms.[20]

When, as has repeatedly happened, the wage rates in that one plant or firm alone rise by 10 or 15 per cent, what is the employer supposed to do according to marginal analysis? Does he ask himself what parts of his work force now cost him more than they are "worth to him"?[21] Does he, at the time the wage increase is definite or shortly thereafter, make or have a "subjective estimate" or "hunch" about the number of workers whom he will discharge because now they do not "pay for themselves?"[22] And on the basis of such a "subjective estimate" or "hunch," influenced presumably by both short-run and long-run considerations, is the employer supposed to schedule the appropriate number of discharges? Or is the employer supposed to start on a "doseing" process, reducing his work force one or two at a time until he finds the number that "in a vague rough way" again "equates marginal net revenue with marginal factor cost?" Are these the "adjust-

[20] The conditions, therefore, are that the relative change in the firm's wage scale is confined to the firm, is expected to be maintained for some time, and has no noticeable effect on product prices. Professor Machlup states (p. 548) that whether an employer has foreseen the wage change or is surprised by it and whether he reacts quickly or slowly to it may also cause the effects of the wage change to be "very different." It is, however, difficult to see why such variables should cause a significant difference for more than an extremely brief period of time in cases such as the ones under consideration. The firms could be differentiated on the basis of whether the independent wage increase was forced by local labor market conditions, by the threat of union organization, or by collective bargaining after organization, but it is doubtful whether significant differences would be revealed by such differentiation. In each case, the independent wage increase was forced on the employer.

[21] *American Economic Review*, Vol. XXXVI, No. 4, Pt. 1, p. 532.

[22] *Loc. cit.*

ments" that Professor Machlup has in mind when he says that marginal analysis explains "what kind of changes may cause the firm . . . to reduce employment?"[23]

From talking with a number of Southern manufacturers who have voluntarily granted (or been forced to grant) independent wage increases for reasons such as those mentioned above, I state that they do not adjust to the higher wage scale in any such manner. I am confident that the records for a group of Southern firms during the period of a year beginning with the month prior to the date that the independent wage increase became definite at each plant will show that, as a group, their employment did not decline relative to employment in the rest of the Southern plants in their respective industries.[24] I am also confident that most of the Southern employers who have been so situated, or who may be in the future, will state unequivocally that, around the date of such wage increases or shortly thereafter, they did not and normally would not engage in any "subjective estimates" or "hunches," based on short-run and long-run considerations, of the number of employees that they would have to discharge or the amount by which they would reduce their output or working force. And I doubt that all the "subtle" analysis and "ingenuity" of a marginalist in "close personal contact" with such business men (even if he calculates "money equivalents" for their personal satisfactions and dissatisfactions or desires and fears, and adds such "equivalents" to or subtracts them from the firm's marginal revenue and marginal cost curves as Professor Machlup mentions[25]), will make them change their answers to correspond with the contentions of marginalists.[26] They will not, I aver, claim that they rather consistently

[23] *Ibid.*, p. 521.

[24] Note is taken of Professor Machlup's contention (p. 548) that "statistical studies in the relationship between the wage rates and employment in large samples of individual firms or industries would be nearly useless because we have no way of eliminating the simultaneous effects of several other significant variables, especially those of a psychological nature." As already indicated in footnote 20, the practical effects of the psychological variables he lists would be largely eliminated by the conditions and methods described in the text. Presumably Professor Machlup would, however, continue to insist that this method is the only way to skin the cat and that "statistical investigations of the wage-employment relation of individual firms are not likely to yield useful results"—at least not useful for his purposes.

[25] *Ibid.*, p. 526. By considerable "ingenuity" Professor Machlup (p. 552) accuses me of arguing two ways. I could comment at some length on his own ambidextrousness in including all sorts of nonpecuniary considerations under marginal analysis of the business firm and in admitting lack of knowledge of "the nature, strength and effects of non-pecuniary considerations in business behavior" while insisting that "Not much depends on whether non-pecuniary considerations of the business man are translated into money terms or, instead, treated as exceptions and qualifications in the explanation of typical business conduct" (pp. 526 and 527). However, I forego such comment to employ the space for more useful purposes.

For the same reason I do not discuss his simple analogies to auto driving, purchasing spinach, etc., by which he evades the issue (*e.g.*, p. 534), conceals significant differences, and commits the fallacy of reasoning from consumer commodity purchases to purchases of labor (discussed *infra* Section III).

[26] Professor Stigler talks repeatedly of the discharge of workers as a result of higher minimum wages, stating that under "current proposals" (a minimum "of 60 to 75 cents per hour" under the Fair Labor Standards Act) "possibly several hundred thousand workers would be discharged." He states that "Employment will fall for two reasons: output falls; and with

follow a policy of varying, and especially reducing, the volume of employment in a plant in order to maintain equality between a "guess of a purely hypothetical nature" (marginal net revenue productivity) and marginal labor cost, which is especially difficult to calculate for joint, multi-processed products and which varies with a number of factors, particularly the scale of plant operations.

How about the substitution of other resources for labor with the rise in wage rates and unit labor costs? In the industries here under consideration, the Southern mills generally are the newer, more modern ones, having the more up-to-date equipment. As explained in my previous article, replies from executives of 42 out of 44 interregional concerns with some million employees stated flatly that the significantly lower wage rates for comparable jobs in the South *themselves* had not caused their firms to use production techniques or methods in their Southern plants that require more labor and less machinery than the proportion of labor to machinery used in their Northern plants.[27] Substitution of machinery and power (which generally has a higher per man-hour consumption in these industries in the South than in the North) is, of course, not the only kind of substitution of other resources for labor. However, the existence of these plant conditions considerably limits the possibilities of such substitution and, therefore, according to marginal analysis should make the labor discharges all the larger and more certain.[28]

The shortcomings of marginalist contentions are especially evident when one attempts to use that analysis to explain wage-employment relationships in one plant of a large, multi-plant concern like the Ford Motor Company or Swift and Company. It certainly is most naïve to assume that changes in employment in a branch plant of one of those companies are governed by, and in conformance with, short- and long-run changes in marginal labor cost and marginal net revenue productivity. The unreality of marginalist assumptions for such multi-plant companies is indicated by the data just mentioned, revealing no higher labor-to-machinery mix in the lower wage, Southern plants of interregional concerns. For such companies it would be difficult even to discover what official was supposed to make, for any one plant, both the required marginalist "estimates" and "guesses of a purely hypothetical nature" and also the decisions that vary (especially decrease) the volume of employment in the plant as required by the marginal calculations. It should be emphasized that the discussion and data in my March, 1946 paper and in this article have been based primarily on small, single-plant concerns, the most favorable set-up for marginalism.

Weaknesses in the "marginal principle" as an explanation of wage-employment relationships in individual firms should be evident from the

substitution of non-labor resources a given output is secured with less labor." *Cf. American Economic Review*, Vol. XXXVI, No. 3, pp. 359 and 361. His contentions are discussed further *infra*.

[27] *American Economic Review*, Vol. XXXVI, No. 1, p. 74. *Cf.* also "Effectiveness of Factory Labor: South-North Comparisons," *Jour. Pol. Econ.*, Vol. LIV (Feb., 1946), pp. 69–70.

[28] This is not to deny the importance of improvements in management about which more is said *infra*.

above discussion and data presented in my previous paper. Presumably Professor Machlup would not contend that employers establish and alter their wage scales according to the principle of each firm equating its own marginal net revenue productivity and marginal factor cost, for certainly there is plenty of evidence to the contrary.[29] Additional facts about labor markets and employer's wage and employment policies that are difficult to reconcile with pecuniary marginalism are discussed below, especially in Section III.

II

The questionable conclusions that are likely to follow from strict application of pecuniary marginalism to wage-employment problems are well illustrated by Professor Stigler's article on "The Economics of Minimum Wage Legislation." It indicates inadequate understanding of: (a) the process of wage determination in American industry, (b) actual operations in labor markets, (c) the policies and functioning of management in manufacturing concerns, and (d) the economic effects of minimum-wage fixing as observed in practice.

In considering "the effects of a legal minimum wage on the allocation of resources," Professor Stigler divides labor market situations into two types: (1) "competitive wage determination," in which employers "do not have control over the wage rates they pay for labor of given skill and application,"[30] and (2) "employer wage determination," in which "an employer has a significant degree of control over the wage rate he pays for a given quality of labor."[31] As is indicated subsequently, such a view of labor markets is unreal and misleading.

Referring to "competitive wage determination," Professor Stigler states: "Each worker receives the value of his marginal product under competition."[32] Note, *each* worker. No exceptions, no qualifications, no explanations. Professor Stigler continues: "If a minimum wage is effective it must, therefore, have one of two effects": either "workers whose services are worth less than the minimum wage are discharged" or "the productivity of low-efficiency workers is increased."[33] But in the latter case Professor Stigler con-

[29] For example, Professor W. Rupert Maclaurin found from a study of "Wages and Profits in the Paper Industry, 1929–1939" that: "The evidence seems to indicate that a great many companies gave no conscious thought to maximization of profits in the economist's sense of the term. 'Keeping in the black' was regarded as important; but within a quite broad range of action, particularly in the short run, other motives appeared to be more vital than getting the last dollar for the stockholders. . . . In many cases the maintenance of a contented working force appeared to be an objective in itself, regardless of whether it might also maximize profits." *Quart. Jour. Econ.*, Vol. LVIII (Feb., 1944), pp. 225–26.

Further support for the statement in the text is provided by the study of company wage policies and practices that I have been making during the past year and for which detailed data have been supplied by some 100 companies and over 45 interviews with company officials have been completed.

[30] *American Economic Review*, Vol. XXXVI, No. 3, p. 358.

[31] *Ibid.*, p. 360.

[32] *Ibid.*, p. 358.

[33] *Loc. cit.*

cludes that discharge of workers is also likely either because of the substitution of other resources for labor or because of the elasticity of demand for the product.[34] After some further discussion, upon which comment is made below, he concludes: "the legal minimum wage will reduce aggregate output, and it will decrease the earnings of workers who had previously been receiving materially less than the minimum."[35]

During the past 30 or 40 years there has been a wealth of experience with minimum-wage laws in the states, under the Fair Labor Standards act, and in foreign countries as well as with wage minimums under the National Industrial Recovery act and the National War Labor Board. Lack of any reference to that experience gives Professor Stigler's paper a pre-World War I flavor, as though it were contemporary with the adverse pronouncements of marginalists like J. B. Clark and F. W. Taussig on minimum-wage legislation some thirty years ago.

Much of the experience under minimum wages fails to support Professor Stigler's conclusions. He states that "the low-wage industries are competitive" in nature and offers a list including cotton textiles, men's and boys' furnishings, and miscellaneous textiles and apparel. Presumably those are industries in which, in his opinion, "each worker receives the value of his marginal product" and employers do not have "a significant degree of control" over the wage rates that they pay. Yet investigations indicate that a wide range of rates are being paid by firms in the same locality for the standard textile jobs,[36] that many Southern textile firms have not had a regular or rational pattern of occupational wage differentials,[37] that significant race differentials have prevailed for the same unskilled work at admittedly the same physical productivity,[38] and that significant differences in labor effectiveness and output per man hour have existed between textile firms paying approximately the same scale of rates and located in the same

[34] *American Economic Review*, Vol. XXXVI, No. 3, pp. 358–60 including footnote 2.

[35] *Ibid.*, p. 361. In similar vein and without any qualification, Professor John V. Van Sickle has recently written: "In and of itself, any minimum wage makes for some private unemployment." *Cf. Harvard Business Review*, Vol. XXIV (Spring, 1946), p. 282.

[36] *Cf.*, for example, the author's articles on "Wage Diversity and Its Theoretical Implications," *Rev. Econ. Stat.*, Vol. XXVIII (Aug., 1946), pp. 152–59 and "Diversity in North-South Wage Differentials and in Wage Rates within the South," *Southern Econ. Jour.*, Vol. XII (Jan., 1946), pp. 254–60.

[37] *Cf.* The articles cited in footnote 36 and the Opinion of the National War Labor Board in Southern and Northern Textile Companies case, March 9, 1945, *War Labor Reports*, Bur. of Nat. Affairs, Inc., Vol. 21, pp. 881–82.

[38] National War Labor Board cases in the South uncovered numerous instances in which a firm had race differentials from 5 to 15 cents an hour for work that was reluctantly admitted to be the same or comparable. The rate of pay for Negro sweepers, scrubbers, janitors, and yard labor in textile mills in the South has commonly been 2½ to 5 cents per hour under that for white workers on the same jobs, often in the same mill. Repeatedly the author has been told where there are dual rates for a job that the lower one is the "colored rate," yet often it was recognized that the performance of Negro workers was equal to that of whites on that job. When the Board reduced or eliminated such race differentials, Negro workers were not discharged.

labor-market areas.[39] Study of wage rates in the low-wage industries of the South clearly indicates that unorganized employers do have a fairly wide range of discretion within which to establish the level of wages they may pay.[40] Indeed, in the South the relative range of rates for the same occupations (from janitor to skilled trades) tends to be wider between the highest-paying firm and the lowest-paying firm in a labor-market area, and occupational differentials are generally less regular or rational, in low-wage "competitive" industries like cotton textiles, hosiery, furniture, and apparel than is true for the higher-wage (more monopolistic?) industries like oil, aircraft, autos, glass, and steel.

My article in the March, 1946, issue of the *Review* discussed experience under the Fair Labor Standards act directly contrary to Professor Stigler's conclusions.[41] In two industries, the firms most affected by wage minimums experienced the greatest increases in employment. With the lack of labor standards characteristic of many low-wage industries, including wide variation in wage scales between firms in the same business in a locality or "labor-market area," legally established minimum wages generally force wage increases in but a small percentage of an industry (say 10 per cent) and frequently the whole wage scale is increased in the minority of firms affected so that there is no added stimulus to substitute between labor grades or occupations. Even in the absence of unions, established manufacturing firms have not followed the practice, as stated by Professor Stigler, of discharging regular employees of the firm in order to hire new employees in their place in hopes thereby to obtain more efficient workers.

How then is a minimum wage supposed to lead to curtailed output and discharge of large numbers of workers? Through increased prices for the industry's products? Even on marginalist reasoning that seems exceedingly unlikely. Only a small percentage of the industry is affected and the affected firms are not likely to adjust by curtailing output except (in rare cases) by disposing of equipment, not replacing it as it wears out, or closing down the plant. Data previously referred to indicate that employers in the low-wage industries generally seem to believe that their variable costs per unit of output (to say nothing of fixed costs per unit) increase significantly as the scale of plant operations decreases from what they con-

[39] This statement is based on information gathered from interviews, hearings in War Labor Board cases, and replies to questionnaires. For a similar opinion of a more general nature, *cf.* Charles A. Myers and W. Rupert Maclaurin, *The Movement of Factory Workers*, 1943, p. 78 and "Wages and the Movement of Factory Labor," *Quart. Jour. Econ.*, Vol. LVII (Feb., 1943), pp. 251–53. For evidence of a lack of correspondence between labor efficiency or labor output and North-South wage differentials for interregional concerns *cf.* the author's article, "Effectiveness of Factory Labor: South-North Comparisons," *Jour. Pol. Econ.*, Vol. LIV (Feb., 1946).

[40] For some evidence from a Northern city *cf.* W. Rupert Maclaurin and Charles A. Myers "Wages and the Movement of Factor Labor," *Quart. Jour. Econ.*, Feb., 1946, pp. 251–53 and 264; and *The Movement of Factory Workers*, pp. 62–63 and 73–76.

[41] Pp. 75–76. For references to additional evidence in opposition to Professor Stigler's conclusions *cf.* my *Economics of Labor*, pp. 322–23 and 334–36.

sider to be 100 per cent plant capacity.[42] Consequently, curtailment of output in one or more plants would rarely be a rational adjustment, at least in the short run.

The possibilities of substitution of other resources for labor were discussed above. As explained, the low-wage Southern sections of many of these industries have relatively high percentages of the more modern plants and equipment, which helps to explain why the possibilities of substituting labor-saving equipment, power, or other material factors for labor in those plants are distinctly limited.

The largest remaining area of adjustment is what might be called "better management," including such matters as the selection, flow, and treatment of materials, the scheduling of production, organization of the work, better shift arrangements, regularizing sales and employment, etc. Professor Stigler doubts the validity of the contention that minimum wages may lead to the adoption of techniques previously profitable, or the discovery of new techniques, in low-wage industries subject to vigorous competition in national markets. He claims that "this 'shock' theory is at present lacking in empirical evidence."[43]

Actually there is a large volume of experience in the South and elsewhere indicating that real improvements in management, sometimes following alterations in management personnel, have occurred when one or more firms have been forced to raise wage scales because of the threat of unionism, the certification of a union as bargaining agent after an organizing campaign, or minimum wages resulting from government action. Part of the relative improvement in management in the affected firms would have been profitable before the higher wage scale took effect. Marginalists are prone to overlook the marked differences in management efficiency and the fact that management personnel, and not the work force, may be altered when the firm's operations are unprofitable. The management-stimulating effects of independent firm increases in wages and of higher minimum wages are common knowledge in business circles in the South.[44] Moreover, answers of executives of 43 Southern firms indicated that the "shock" of a relative wage increase in a low-wage section of an industry may frequently lead to increased sales efforts[45] and thus perhaps expand sales, production, and employment beyond the volume that otherwise would prevail—a result completely opposite to the expectations of the marginalists.

The "ingenious" marginalist may point out that such management improvements and increased sales efforts, though contrary to his expectations, may help to reduce unit and marginal labor cost and therefore operate

[42] *Cf.* "Shortcomings of Marginal Analysis for Wage-Employment Problems," *American Economic Review*, Vol. XXXVI, No. 1, pp. 68–71.

[43] *American Economic Review*, Vol. XXXVI, No. 3, p. 359.

[44] *Cf.*, as merely one example, the statement of an executive of a large Southern textile concern quoted "Shortcomings of Marginal Analysis for Wage-Employment Problems," *American Economic Review*, Vol. XXXVI, No. 1, p. 80.

[45] *Ibid.*, pp. 77–81.

in the direction of equating marginal net revenue productivity and marginal factor cost. Such actions can, however, hardly be described as employing workers according to the marginal principle and certainly would indicate real shortcomings for that principle as an explanation of wage-employment relationships in individual firms. Furthermore, marginal net revenue productivity and marginal labor cost may still be unequal after the management improvements or increased sales efforts. If so, what does the employer do? Curtail his output? Discharge some employees in order to reduce his working force? No, for reasons already discussed, business men do not generally think and operate that way.

At the heart of economic theory should be an adequate analysis and understanding of the psychology, policies, and practices of business management in modern industry. Contrary to the assumptions of marginalists, the quality of business management may not vary according to its compensation, nor is such management all cut to the same pattern, motivated by a single pecuniary purpose and making decisions by one method (*i.e.*, comparison of marginal magnitudes). Examination of managements in modern manufacturing corporations clearly reveals marked differences in attitudes, policies, methods, and results in firms where compensation to the management is approximately the same. Investigation of the operations of business management shows to what a large extent wage rates and employment in modern industry are influenced by factors other than pecuniary comparisons of marginal units.[46]

III

Reasoning about labor markets as though they were commodity markets seems to be an important explanation for erroneous conclusions on such matters as minimum wages. Phrases and statements like the following appear repeatedly in recent writings of economists: "the equilibrium level of wages in a purely competitive labor market"; "pure competition in the labor market under which the wage is 'given' to the firm and beyond its control"; "under a free labor market, different wage rates for the same kind of labor could not long exist"; "the wage which 'clears the market' with free entry for all qualified applicants in each classification is the economically justifiable wage"; "labor is properly priced and allocated in a competitive system if, say, all unskilled labor in a particular market sells at the same price."

[46] If business managements did all operate as the marginal theory implies, presumably they would be intensely interested in arranging their cost systems so that marginal estimates and comparisons might be made. Actually a study by the Office of Price Administration in 1946 revealed that, of 187,370 companies investigated, about 85 percent did not allocate cost on a product basis. (See *A Report on Cost Accounting in Industry*, Accounting Department, Office of Price Administration, June 30, 1946, pp. iii and iv.) That means that more than five out of every six firms do not have total cost figures separated by product and could not, therefore, even calculate average unit costs, to say nothing of marginal unit costs or "marginal net revenue product."

Such data help to explain why, from the 430 Southern manufacturers to whom I sent questionnaires, only 56 replies were received that contained estimates regarding changes in their unit variable costs with changes in scale of output or regarding their adjustments to relative changes in wage scales.

Contrasts between labor and commodity markets are striking. The labor market itself is even difficult to define; the initial sale takes place at each employer's employment office or on the job and thereafter presumably occurs at each work bench in continuous fashion so long as hourly workers remain at work.

A job is a complex of factors, most of which have no counterparts in commodity markets. Such factors include physical conditions in the plant, workloads, speed of operations, danger of the work, length of the workday and workweek, vacations and holidays, benefit and recreational programs, plant rules, seniority provisions or practices, steadiness of employment on the job, advancement possibilities, prospects for relative wage increases or decreases on that job in that firm, existence or non-existence of a union and a labor agreement, the kind of union, etc.

In addition, there are a number of psychological and social factors that recent investigations indicate are important in explaining differences in job satisfaction and effectiveness of labor, such as the human quality of supervision and top management, friendship and personal loyalties, congeniality of fellow workers, social life in the shop, social status of the work, and notions of fair and equitable treatment.

Company wage and employment policies, even in the absence of unions, generally differ markedly from their policies with respect to the purchase of commodities. In considerable measure, their labor-market policies do not strictly follow demand, supply, or mere price considerations. Usually employers make wage increases or decreases across-the-board for the various occupations and not in terms of local demand and supply for each occupation. Normally companies of any size will not dismiss established employees in order to hire other labor offering to work at wage rates below the company's current rates. The labor-market policies of many companies are governed to a considerable degree by a desire to preserve their reputation in that market and to develop and maintain employee "loyalty" to the company.

Unlike a reduction in commodity purchases, reduction in an employer's work force generally involves significant costs to the employer. It is costly, for example, because of the adverse effects upon the morale of the remaining workers, the tendency for workers to restrict output in the face of reductions in the work force, the need to shift workers to different jobs with changes in the scale of plant operations, and possible increases in the employer's tax rate under experience rating in unemployment compensation (not to mention plans for dismissal compensation, guaranteed employment, or guaranteed wage income). The added costs of work-force reduction may be especially high under a union agreement. Such factors, though troublesome to a marginalist, must be taken into account in discussing employment adjustments to wage changes.

A firm may increase its wage scales for a variety of non-market reasons[47]

[47] In 1937, Professor John W. Riegel reported that "Executives of 60 important firms stated at a recent conference that some of the differences in wage rates between firms could be explained 'only on grounds of one employer's ability and willingness to pay more than other employers for apparently comparable services'." *Wage Determination*, p. 8.

such as notions of "fairness" and "rightness," increases in the cost of living, custom and tradition, maintenance of historic relationships, desire for the security from criticism provided by conformance to an industry pattern, public sentiment, etc. Wage changes often spread from company to company by emulation rather than because of present or prospective demand and supply in the labor market. The extent to which companies follow a leader, the industry, or a job evaluation system, and disregard narrow market considerations in making wage changes is brought out by a study of company wage policies on which the author is engaged.

Many company policies in the labor market simply do not conform to the precepts of pecuniary marginalism so that "each worker receives the value of his marginal product under competition." Consequently, a wide diversity of wage rates may exist and persist in the same locality for workers of equal skill, ability, and effectiveness.

Such matters are elementary and commonplace to a student of labor but they seem to be largely overlooked by theorists of the marginalist faith. It will not do to dismiss them with such a remark as: "Not much depends on whether non-pecuniary considerations of the business man are translated into money terms or, instead, treated as exceptions and qualifications in the explanation of typical business conduct."[48] Even on the "pecuniary" side, marginalism has become suspect for some of the reasons indicated above and in my previous paper. The existing and expected volume of product sales appears to be a factor in firm employment that operates independent of the principle of equating its marginal net revenue productivity and marginal labor cost. Wage-employment relationships for individual firms cannot be adequately explained if we confine our thinking within the mental ruts of the marginalists.

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[48] Machlup, *American Economic Review*, Vol. XXXVI, No. 4, Pt. 1, p. 526.

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Rejoinder to an Antimarginalist

In his note[1] Professor Lester replies to certain critical comments which I made in a recent article[2] on antimarginalist prejudices and misunderstandings of the type exhibited by him.[3] I avail myself of the traditional right of rejoinder.

I begin with a concession. I readily concede to Professor Lester that I did not know whether he had asked his questions of Southern industrialists on one sheet of paper or on separate sheets; at one time or at different times. Thus I spoke of each of three sets of questions as a "questionnaire." Now I learn that they were "parts of one questionnaire" (although there had been

[1] "Marginalism, Minimum Wages, and Labor Markets," pp. 135–48 above. Cited hereafter as "Marginalism."

[2] "Marginal Analysis and Empirical Research," *Amer. Econ. Rev.*, Vol. XXXVI (Sept., 1946), pp. 519–554.

[3] "Shortcomings of Marginal Analysis for Wage-Employment Problems," *Amer. Econ. Rev.* Vol. XXXVI (Mar., 1946), pp. 63–82. Cited hereafter as "Shortcomings."