ON THE BECKER MODEL AND OF DISCRIMINATION MONOPSONY

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CONTENTS

I. INTRODUCTION

In Gary Becker's book on racial discrimination, he seriously questions the ability of economic forces to come together in order to exercise a monopoly influence in the labor market. His argument basically centers on the fact that the economic forces are too diverse and scattered and lack a cohesive organization to effect a monopoly position in the market place. Consequently he concludes that his competitive mode of racial discrimination is valid.

Becker's model of labor market discrimination is the seminal work on discrimination. Until Becker's monograph, economists had neglected the subject of economic discrimination. Although discrimination against minority groups was exercised and its economic consequences suspected, a generalized therory of discrimination was not forthcoming. Becker's model was the first attempt to build a theoretical model of discrimination and develop the methodology to estimate the economic effects of discrimination. Until recently, the Becker model has been the basis for a majority of the empirical research conducted in this vitally important area. Since Becker's model has played an important role in research on discrimination and in establishing public policy to combat discrimination, an examination of the model and its implications are in order.

The basic assumptions of the Becker model are:

1. There are two independent societies. One community composed of all balck individuals and the other composed of white individuals;
2. Capital and labor are the only factors of production;
3. Only one commodity is produced which limits trade between the two communities to trade in resources;
4. The two societies have identical linear homogeneous production functions;

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5. The black society is labor intensive relative to the white society, and the white society is capital intensive relative to the black society;
6. Factor supplies are perfectly inelastic in both societies;
7. White maximize a utility function with discrimination as an argument;
8. Factors of production are prefectly mobile between the two communities;
9. Perfect competition in the resource markets and product markets.[1]
10. Institutional structure fixed.[2]

Given these assumptions, let the two societies begin trading. Without discrimination, labor in the black society will be exported to the white society and capital will be exported to the black society. In the absence of discrimination, trade will equalize the prices of the factors of production in the two societies.

With the two societies trading factors of production, if the white society decides to discriminate against black labor, white society will trade less of its capital for black society's labor. Black society would experience a lower capital-labor mix lowering the wage of black labor. White society would have a higher capital-labor mix raising white labor's wage. The payment to white capital would decrease and capitalist in the black society would experience an increase in income.[3] Becker concludes that the incomes of both societies are reduced:

> In the new equilibrium, then, less labor and capital are exported by N and W, respectively. It can be shown that this change in resource allocation reduces the equilibrium net incomes of both N and W. Since discrimination by W hurts W as well as N, it cannot be a subtle means by which W arugments its net command of economic goods.[4]

II. CRITICISM OF THE BECKER MODEL

Independence of the Black and White Societies

The independence assumption is important to the Becker model. If the two societies are not independent, and assuming the white society is dominant, then the white society must have power to influence the terms of trade between the two societies. Within the context of the model, dependence would violate the competitive assumption. The ability of the white society to discriminate implies a degree of monopoly power.[5]

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1. Gary S. Becker, *The Economics of Discrimination* (Chicago, Illinois: The University of Chicago Press, 1971), pp. 19-21.
2. Ray Marshall, "The Economics of Racial Discrimination: A Survey," *Journal of Economic Literature* XII (September 1974) : 861.
3. Becker, p. 20.
4. Ibid., p. 21. N and W refer to black and white societies, respectively.
5. Janice F. Madden, *The Economics of Sex Discrimination* (Lexington: D.C. Heath and Co., 1973), pp. 54-55.

Are black and white societies independent? Whites can exercise some control over blacks by influencing the quantity and quality of education blacks receive, establishing institutional arrangements which favor white society, and by establishing social structures reinforcing the dominant social position of the white society and preventing the upward mobility of blacks.

The dominate white group can influence the quantity and quality of black education in several ways. First, blacks may be barred from certain schools.[6] This inability of blacks to gain entrance into some colleges and universities may not on the surface appear to be unequal treatment of blacks. University personnel may be acting out of good faith when refusing blacks entrance into the school. The discriminating acts occur in the distribution of resources to predominatley black schools. Lower teacher salaries,[7] a teacher salary structure and assignment system which allocates the least experienced and lowest paid teachers to predominately black schools, and encourages the more competent teachers to leave the black schools for the more "challenging" white schools.[8] Prospective black students under these conditions approach the universities less qualified than their white counterparts and experience difficulty gaining entrance into the colleges and universities.[9]

Institutional arrangements that reduce the independence of the two societies are not difficult to identify. State employment agency's job referral procedures tend to be biased against blacks. The agency's employees consider some jobs (the higher occupational status poisitons) to be for whites and direct blacks to lowering paying, less attactive jobs.[10]

Unions are able to control or influence the type of employment a black worker is able to obtain. The exclusionary practices of craft unions has been well documented.[11] Since craft unions are organized along specific skills, the exclusion of blacks from the union is a form of occupational discrimination.[12] Industrial unions include blacks in their membership but establish

6. Herbert Blumer, "Race Relations as a Sense of Group Position," *Race Relation Problems and Theory*, eds. Jitsaichi Masuoko and Preston Valien (Chapel Hill : The University of North Carolina Press, 1961), p. 219.
7. Finis Welch, "Labor-Market Discrimination : An Interpretation of Income Differences in the Rural South," *The Journal of Political Economy* LXXV (June 1967) : 237.
8. John D. Owen, "The Distribution of Educational Resources in Large American Cities," *Journal of Human Resources* VII (Winter 1972): 28-29.
9. Donald E. Frey, "The Distribution of Educational Resources in Large American Cities: A Comment," *Journal of Human Resources* VII (Fall 1973): 517. Frey argues that Owen's conclusions are not always correct. He establishes the necessary conditions for Owen's conclusion to be valid. Frey estimates the proportion of white students necessary for the discrimination in educational resources to black schools to exist.
10. Herbert Hill, "Racial Inequality in Employment: The Pattern of Discrimination," *Race and Poverty: The Economics of Discrimination*, ed. John F. Kain (Englewood Cliffs: Prentice-Hall, Inc., 1969), p. 82.
11. Benjamin W. Wolkinson, *Blacks Unions, and the E.E.O.C.: A study of Administrative Futility* (Lexington: D.C. Heath and Co., 1973), pp. 5-31. Wolkinson examines in great detail the discriminatory practices of craft and industrial unions.
12. Joseph E. Stiglitz, "Approaches to the Economics of Discrimination," *American Economic Review* LXII (May 1973): 289-290.

different proceduresfor blacks in regard to hiring,[13] promotions and seniority.[14] Blacks searching for employment outside the unionized sector are subject to the union influence. Being excluded from some occupations by the craft unions and receiving unequal treatment by industrial unions, blacks are channeled to less attractive jobs. Employment of blacks is not completely independent of white society.

Finally, the interdependence of the two societies is reinforced by the white society's desire to maintain a preferred social structure. "The dominant group is not concenred with the subordinate group as such but it is deeply concerned with position, vis-a-vis the subordinate group .... The sense of group position is the very heart of the relation of the dominant to the subordinate group."[15] The sense of the group position reduces the opportunity to move up in occupation and social status. This form of discrimination permits blacks to live and work in the white society as long as long as they maintain the proper posture relative to the white society.[16] The sense of social position by white society restricts the black worker to certain jobs and professions.

> The third feeling, the sense of proprietory claim, is of crucial importance. It is the feeling on the part of the dominant group of being entitled to either exclusive or prior rights in many important areas of life. The ragne of such exclusive or prior claims may be wide, covering ... the right to certain jobs, occupations, or professions....[17]

The ability of whites to influence the quantity and quality of education blacks receive, the maintenance of institutional arrangements favoring whites, and the assertion of a social structure adverse to blacks weakens Becker's assumption of independent societies.

Trade only in Factors of Production

In Becker's trade model, only trade in factors of production is permitted. Becker makes this assumption to generate black-white wage differentials. Assuming whites dislike working with blacks, then they must receive a higher wage if they do work with black labor.[18] Black labor cannot avoid the discriminatory behavior of the whites since factors of production, not commodities are traded. The only recourse of the black society is not to trade with the white society.

Limiting trade to factors of production does not necessarily produce the input wage differentials that Becker tries to accomplish. Becker's aversion assumption is not a sufficient condition to generate factor price differentials. Wage equalization would be accomplished if there were enough

13. Orley Ashenfelter, "Discrimination and Trade Unions," *Discrimination in Labor Markets,* eds. Orely Ashenfelter and Robert Rees (Princeton: Princeton University Press, 1973), pp. 96-97.
14. For a detailed discussion on these discriminatory practices see Wolkinson.
15. Blumer, p. 20.
16. Ibid., p. 49.
17. Ibid., p. 219. Although whites seek to maintain a preferred social structure by preventing blacks from entering certain occupations, the entrance of blacks into professions or high occupational status jobs would be sanctioned by whites as long as blacks are servicing black constituents. For example, a black physician with black patients would be acceptable to whites.
18. Becker, p. 56.

white workers willing to work with blacks.[19] Aversion to working with blacks and a limited supply of whites indifferent to working with black labor are sufficient conditions to produce factor wage differentials.

In addifition to assuming trade only in factors of production, Becker assumes only one commodity is produced.[20] In the absence of discrimination, Becker's model implicitly implies that factor price equalization would result. But in order for factor price equalization to occur, the number of production inputs must be equal or less than the number of commodites.[21] Thus Becker's model would create factor price differentials in the absence of discrimination.[22]

As Madden points out, the assumption of homogeneous productions is unnecessary when trade is restricted to factors of production. In the absence of trade barriers, factors would flow between the two societies until their marginal products were euqalized. The scale assumption would affect the relative quantities of the factors traded but not their absolute amounts.[23]

Inelasticity of Factor Supplies

Becker assigns the supply side of the labor market a passive role by assuming the supply of labor, black and white, is perfectly inelastic.[24] This permits him to develop a theory of discrimination based on demand. Becker relaxes this assumption later in his book when he addresses the subject of complements and imperfect substitutes and acknowledges the role that supply may play in creating wage differentials. "The equilibrium MDC is smaller, the larger the supply elasticities of these different kinds of labor are."[25] The smaller the market discrimination coefficient (MDC), the lower the black-white wage differential, given demand. But as will be proven later, blacks must have a more inelastic supply curve than white labor in order for wage discrimination to be possible.

Research supports the relatively more inelastic labor supply curve of blacks. Boskin[26] and Hill,[27] in separate papers, have found the supply of black labor to be more inelastic than white labor. (Boskin and Hill were concerned only with poor blacks and whites). They estimated the labor supply functions across occupations and not within occupations.

The inelasticity of black labor supply may be the result of whites being able to influence

19. Joseph E. Stiglitz, "Theories of Discrimination and Economic Policy," *Patterns of Racial Discrimination, Volume II: Employment and Income,* eds. George M. Von Furstenberg, Ann R. Horowitz and Bennett Harrison (Lexington: D.C. Heath and Co., 1974), p. 7.
20. Madden, pp. 50-51.
21. P.T. Ellsworth, *The International Economy* (New York: Macmillan Co., 1969), p. 200.
22. Additional assumptions required to achieve factor price equalization are equalization of commodity prices, incomplete commodity specialization and no factor reversals inputs are perfect substitutes. Ellsworth, p. 200.
23. Madden, pp. 49-50.
24. Ibid.
25. Becker, p. 60.
26. Michasel J. Boskin, "The Economics of Labor Supply," *Income Maintenance and Labor Supply,* eds. Glenn Cain and Harold Watts (Chicago: Markham, 1973), pp. 177.
27. Russell C. Hill, "The Determinants of Labor Supply for the Working Poor." *Income Maintenance and Labor Supply,* eds. Glenn Cain and Harold Watts (Chicage: Markham, 1973), pp. 194-195.

factors determining blacks labor supply. If this is the case, then the competitive assumption of the Becker model would be violated. Whites have some control over the quality of education blacks receive thus making them less competitive for certain jobs. The recent controversies surrounding the desegregation of public schools implies a degree of influence on the part of whites to affect the education of blacks. Also if blacks have less market information than whites, then the black labor supply functions would be inelastic relative to whites. The nature of the supply elasticities should be empirically tested, not assumed away.

Occupational Discrimination

The Becker model discusses occupational discrimination within the framework of employee discrimination. If a firm must compensate white labor for working along side black labor, or if white labor is willing to forego income to avoid working with black labor, then employee discrimination exists.[28] Becker argues that within a given occupation, employee discrimination increases as the proportion of black employees increases. Thus we would expect blacks to receive a lower wage in an occupation where their relative numbers are large relative to an occupation with a relatively low proportion of blacks.[29]

Occupational discrimination occurs when a black is prevented from working in a given occupation.[30] If a black finds employment in an occupation but at a wage lower than white labor, then we have wage discrimination within the occupation and not occupational discrimination.[31]

Occupational discrimination is inconsistent with the Becker model. Restricting the entry of blacks into an occupation implies an element of monopoly power and violates the competitive assumption of the model.

Assume white labor is able to restrict the entry of black labor into occupation A but black labor is unhindered in finding employment in occupation B. The supply of black labor in occupation B would be increased, depressing the wage rate in that occupation. The wage in occupation A would increase because of the decreased supply of labor to it. Changes in supply become the active agent in depressing black wages not demand.

If Becker's model were valid, then black labor's wage would be less than its marginal product. With occupational discrimination, the depressed black wage is equal to its marginal product. The marginal product in occupation B would be lower with occupational discrimination be casue of the crowding of black labor into the occupation.[32]

In summary, Becker's employee discrimination decreases the demand for black labor decreasing black labor's wage. With occupational discrimination, supply increases depressing the black labor's wage rate.

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28. Becker, pp. 153-154.
29. Ibid., p. 107.
30. Barbara R. Bergmann, "The Effect on White Incomes of Discrimination in Employment," *Journal of Political Economy* LXXVIIII (March/April, 1971): 310.
31. Madden, pp. 64-65.
32. Bergmann, p. 308.

Long-run Instability

While the assumptions of Becker's model are inconsistent with the competitive framework of the model, it is also deficient in not being able to explain the long-run persistence of black-white wage differentials. Given a dispersion of discrimination coefficients, discrimination in the long run should be reduced to the lowest discrimination coefficient.[33] That is, firms discriminating the least should prevail over firms with a greater taste for discrimination.

If we assume, as Becker, Constant returns to scale for non-discriminators, then in the long run discriminators will be eliminated from the market. With increasing costs, discriminators and non-discriminators can co-exist in the long run. In a competitive market, assuming the non-discriminator has a lower average cost than the discriminating firm, then at a price equalizing the marginal costs of the firms and earning zero profits for the discriminator, the non-discriminating firm will produce more than the discriminating firm, and the former will earn an economic rent.[34]

Bergmann has noted the long-run instability of the Becker model and attributes the continued existence of discrimination in the long run to non-economic forces.

If economic incentives on discrimination under capitalism discourage discrimination rather than encourage it, how can it persist? The answer, of course, is that economic forces are far from the whole story in racial matters and are probably a minor part of the story. Human beings seem to have the tendency to set up hierarchial relationships and to live in social systems in which A is treated with more respect than B for reasons X, Y and Z.[35]

III. A MONOPSONY MODEL OF DISCRIMINATION

Janice Madden has developed a model of labor market discrimination based on monopoly power.[36] Madden developed the model to explain sex discrimination. If the model is to be useful in establishing policy in all areas of discrimination, then it should not be limited to a special case of discrimination. The major thesis of this paper is that the above model is applicable to the case of discrimination against blacks. The Madden monopoly model will be explained and developed within this context.

In the competitive model, discrimination takes place on the demand side. Employers with a taste for discrimination view the wage of blacks as (w + n), where n is a measure of the empolyer's taste for discrimination. Given the supply of labor, a taste for discrimination results in the demand for black labor shifting downward. Consequently, blacks receive a lower wage than

33. Kenneth J. Arrow, "Models of Discrimination," *Racial Discrimination in Economic Life*, ed. Anthony H. Pascal (Lexington: D.C. Heath and Co., 1972), pp. 90-91.
34. Richard B. Freeman, "Alternative Theories of Labor-Market Discrimination: Individual and Collective Behavior," *Patterns of Racial Discrimination*, Volume II: *Employment and Income*, eds. Goerge M. Von Furstenberg, Ann R. Horowitz, and Bennett Harrison (Lexington: D.C. Heath and Co., 1974), pp. 35-36.
35. Bergmann, p. 307.
36. Madden, *The Economics of Sex Discrimination.*

whites. In the monopoly model, employer's observe a difference in the supply functions of blacks and whites. Given demand, two groups of labor can be paid different wages if their supply elasticities are not equal. The labor group with the lower supply elasticity will receive the lower wage.

Assuming monopsony elements exist in the labor market, Madden develops three necessary and sufficient conditions for wage discrimination. First, the labor supply curves must have a positive slope. Second, the labor pool can be divided into distinct groups. Third, the supply elasticities of the labor groups are not equal. Verification of these conditions follows.

Supply Curve must have a Positive Slope

Let there be a profit maximizing firm with production function q = f(L), where L is the total quantity of labor (black and white). (1)

The labor supply function is

w = g(L), where w is labor's wage. 92)

The commodity demand function is

p = k(q), where p is the commodity price and q is the quantity of the commodity. (3)

Letting π represent profits, the firm maximizes the function

y = pg - wL (4)

Substituting

π = K(q) q – g(L) L

π = k(q) f(L) – g(L) L

π = f(L) k [f(L)] – g(L) L

Differentiation with respect to labor, we get

$$\frac{\partial \pi}{\partial L} = f'(L)\,[f(L)] + \frac{dk(g)}{dg} f'(L)\,f(L) - g(L) - g'(L) = 0 \qquad (5)$$

Collecting terms

$$\frac{\partial \pi}{\partial L} = [k[f(L)] + \frac{dk(g)}{dq} f(L)]\; f'(L) = g(L) + Lg'(L)$$

$$\frac{\partial \pi}{\partial L} = [k(g) + q\frac{dk}{dg}]\; f'(L) = g(L) + Lg'(L)\; [k(g) + q\frac{dk}{dg}] = P(1 - \frac{1}{\eta}),$$

where η is the demand elasticity of the commodity, and

$$g(L) + Lg'(L) = w(1 + 1/e),$$

where e is the supply elasticity of labor.

$$p(1 - 1/\eta)\, f'(L) = w(1 + 1/e) \qquad (6)$$

Equation (6) represents monopoly in the product market. If there was competition in the product market only, then equation (6) would become

$$pf'(L) = w(1 + 1/e) \tag{6. a}$$

If competition existed in the labor and product markets, then

$$pf'(L) = w \tag{6. b}$$

From equations (6. a) and (6. b), we observe that the supply of labor influences the monopsonist purchase of labor's services. In the competitive case, the labor supply has a passive role. The presence of market imperfections does not result in wage discrimination, if there is no discrimination.

The Labor Pool can be Divided into Two Distinct Groups and the Supply Elasticities must be Different for the Two Labor Groups

To obtain the least cost combination of inputs of black and white labor, assume the monopsonist minimizes the function

$$Z = W{\cdot}W + B{\cdot}W_B - \lambda\ [g\text{-}f(W{+}B)] \tag{7}$$

The production function is now

$$q = f(W + B) \tag{8}$$

which implies that white and black labor form two separate labor groups. The supply functions for white and black labor are

$$Ww = g(W) \tag{9}$$

$$W_B = j(B), \tag{10}$$

respectively, and W_w is the wage of white labor and W_B is the wage of black labor.
By substitution

$$Z = W{\cdot}\ g(W) + B{\cdot}j(B) - \lambda\ [q - f(W{+}B)]. \tag{11}$$

Differentiating with respect to W, B and λ, we get

$$\frac{\partial Z}{\partial W} = g(W) + Wg_w + \lambda f_w = 0 \tag{12}$$

$$\frac{\partial Z}{\partial B} = j(B) + Bj_B + \lambda f_B = 0 \tag{13}$$

$$\frac{\partial Z}{\partial \lambda} = q\text{-}f(W{+}B) = 0 \tag{14}$$

We can write

$g(W) + W\ g_W$ as $W_w + W\ g_W = W_W\ (1 + 1/e_W)$, and

$j(B) + B\ j_B$ as $W_B + B\ jB = W_B\ (1 + 1/e_B)$, where e_W and e_B are the supply elasticities of white and black labor, respectively. Substituting into equations (12) and (13), we get

$$W_w\,(1 + 1/e_w) + \lambda f_w = 0 \tag{12.a}$$

$$W_B\,(1 + 1/e_B) + \lambda f_B = 0 \tag{13.a}$$

Solving for λ

$$-\lambda = \frac{W_w\,(1 + 1/e_w)}{f_w} \quad \text{, and} \tag{14}$$

$$-\lambda = \frac{W_B\,(1 + 1/e_B)}{f_B} \tag{15}$$

Equating equations (14) and (15), we get

$$\frac{W_w\,(1 + 1/e_w)}{f_W} = \frac{W_B\,(1 + 1/e_B)}{f_B}$$

Rearranging the equations, we get

$$\frac{W_w\,(1+1/e_w)}{W_B\,(1+1/e_B)} = \frac{f_w}{f_B} \tag{16}$$

With competition in the labor market, $e_W = e_B = \infty$ and equation (16) becomes

$$\frac{W_w}{W_B} = \frac{f_w}{f_B}$$

The competitive firm would not be able to discriminate in wages.

In the monopsony, if $e_B > e_W$, then $\dfrac{W_w}{W_B} \quad \dfrac{f_w}{f_B}$ and white labor would receive the lower wage.

If $e_B < e_W$ then $\dfrac{W_w}{W_B} > \dfrac{f_w}{f_B}$, and black labor would receive the lower wage.

To practice wage discrimination, the supply curve must have a positive slope, the supply elasticities must be different for black and white labor, and the two groups must form two separate labor pools. If the latter condition did not hold, then blacks and whites would compete for the same jobs and wage discrimination would not be possible. But, separation of the labor groups is not a sufficient condition by itself. The other two conditions must hold simultaneously to permit the monopsonist to practice wage discrimination.

Becker questions the monopoly or collusive hypothesis. He asks, "How thousands of firms and millions of workers are able to conspire successfully against minorities."[37] In the monopoly

37. Becker, p. 8.

model, it is not necessary for firms to collude to discriminate against blacks, but a set of conditions must exist to cause the employer to act or perceive the elasticity of labor supply of one segment of the labor force to be more inelastic than another portion of the labor force.

Madden develops a spatial model to explain the existence of monopoly elements.[38] Keeping in mind Madden is concerned with sex discrimination, a family's utility is derived from the consumption of market goods, goods produced by the household, and leisure of the husband and wife. A linear homogeneous utility function is assumed, and it is also assumed that the wife is the sole producer of household goods. Time for the husband and wife must be distributed between work, leisure, commuting, and in the case of the wife, household work.

Given these conditions, Madden develops the labor supply functions of the husband and wife and the related supply elasticities. The elasticity of labor supply for the wife and the related supply elasticities. The elasticity of labor supply for the wife will be less than that of the husband, if the spatial elasticity of the wife is less than the husband's. The model suggests the hypothesis that married women travel smaller distances to work than their husbands. The hypothesis evolves from the trade-off the wife must make between market work. housework, leisure and commuting. The husband need not be concerned with housework. Thus the housewife restricts her search for work to a smaller area than does the husband.

Madden's model is open to criticism. The major criticism is the assumption that the wife is the sole producer of household goods. This rules out production of household goods by the husband and children in the family. If the husband and is permitted to share in the production of household goods, he has another demand on his time. In this case, the husband sharing the production of household goods vis-a-vis the non-household goods producing husband, everything else equal, will live closer to his place of work than the latter husband. As the wife is freed from some of the household producing chores, here distance traveled to work increases and converges to the distance traveled by her husband.

Madden develops the spatial elasticities of supply of work for each spouse.[39]

$$\theta_{T_{cf}\alpha_f} = -(\frac{L_f}{T_{cf}}\,\theta_{L_f\alpha_f} + \frac{T_{Hf}}{T_{cf}}\,\theta_{H\alpha f}$$

$$\theta_{T_{cm}\alpha_f} = -(\frac{L_m}{T_{cm}}\,\theta_{L_m}\,\alpha_m), \text{ where}$$

M and F indicate male and female, respectively;

T_c = time spent commuting;

T_H = time spent producing household goods;

L = leisure time;

α = return for commuting hours;

θ = respective elasticities.

38. Janice F. Madden, "A Spatial Model of Sex Discrimination," Paper read before the meeting of the American Economic Association (Dallas, Texas, December 28, 1975).

39. Ibid., p. 9.

Assume neither the husband or wife produces household goods. Then the elasticities are equal. If the production of household goods are equally divided, the elasticities are equal at equal wages. Assuming wages are equal, then the differences in elasticities are a function of the division of the production of household goods.

Madden acknowledges an inconsistency in the model. For the wife to travel a shorter distance to work, her elasticity of labor supply must be less than her husband's at an equal wage. That is,

$$\theta_{T_{cf}} \alpha_f - \theta_{T_{cm}} \alpha_m < 0$$

For this condition to hold, the sum of the labor-market time and commuting time for the husband must be equal to or less than this sum for the wife. Thus the inconsistency.[40] Despite the inconsistency, Madden is determined to test the hypothesis.

Madden makes some additional questionable assumptions. First, it is assumed that the male and female elasticities of leisure to income are qual and the elasticity of household production to income is equal to the elasticity of leisure (σLL) are equal for the male and female. These assumptions must hold for

$$\theta_{T_{cf}} \alpha_f - \theta_{T_{cm}} \alpha_m < 0$$

I propose a limited information model to explain imperfect labor markets. The lack of complete information allows employers to pay different wages for equal work. Given two workers, A and B, with equal productive endowments but A having acquired less job market information than B, then A's labor supply curve would be less elastic than B's labor supply curve. Assuming everything else equal, the conditions are present for A to be paid less than B.[41]

Insufficient job market information is a function of the following:

1. quantity or type of education;
2. social environment; and
3. segregation.

The quantity or quality of education can affect the elasticity of labor supply in several ways. A deficiency in years of schooling completed by an individual may be the result of discrimination in the distribution of educational resources. Since whites are the majority and they have the greatest degree of influence in the political process, the use of resources for the education of blacks will be for training blacks for occupations complimentary to whites and not competitive with whites. Thus blacks would lack the necessary skills to compete effectively with whites for certain jobs.[42] Given the inadequate job preparation, the black worker is likely to experience high levels of unemployment.[43] The low levels of education and low skill requirements of jobs

40. Ibid., p. 13.
41. Stiglitz, "Approaches to the Economics of Discrimination," p. 291.
42. Harry Johnson, "Unemployment and Poverty," *Poverty Amid Affluence,* ed. Leo Fishman (New Haven: Yale University Press, 1966), p. 187.
43. Hazel M. Willacy, "Men in Poverty Neighborhoods: A Stuatus Report," Monthly Labor Review LXXXXII (February 1969): 26. The comparison here is not between black and white men in a poverty neighborhood, which generally offers men low skill jobs and the men have obtained low levels of human capital, but between the black laborer and the white laborer not living in a poverty area.

available to blacks, operate to weaken the black's attachment to the labor force and the black's sensitivity to monetary rewards.[44]

The black's family structure influences his sensitivity to monetary incentives.[45] The negro male's attachment to the labor force may be weaker because of the weaker family structure of the black family. The negro family tends to be matriarchal. Since women and especially black women, earn less than men, the family is likely to be near the poverty line. These factors combine to work against the young black male completing school and lower the probability of the black male finding full-time employment.[46]

Community structure has a negative effect on the black's attachment to the labor force. In an environment composed of persons working in occupations of similar skill requirement, a worker will more than likely obtain information concerning jobs with these skill requiremnts. That is, if a community has a given frequency distribution of occupational skills available to labor, then a given unit of labor will receive the most information about the mean occupation. If blacks are concentrated in areas where the average worker is employed in a low skill occupation, then the black will receive the most information about low employment opportunities. Also, transportation services in black residential areas are less than in white areas and blacks are less likely than whites to own an automobile. Thus black's ability to acquire information about employment opportunities and higher skilled-higher paying occupations outside their neighborhood are diminished.[47]

In a labor market where the employee does not have perfect information, employers will possess a degree of monopsony power.

> If there are two different groups with different supply elasticities, reflecting different degrees of information efficiency, they will receive different wages (with the presumption that the group with the lower informational efficinency will have a smaller elasticity of supply and therefore a lower wage).[48]

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44. William G. Bowen and Aldrich T. Finegan, "Educational Attainment and Labor Force Participation," *American Economic Review* LVI (May 1966): 575.
45. Harold L. Sheppard and Herbert Striner, "Family Structure and Employment Problems," *Negroes and Jobs* eds. Louis A. Ferman, Joyce Kornbluh and J.A. Miller (Ann Arbor: University of Michigan Press) 1968, p. 174.
46. Willacy, p. 24-26.
47. Malcolm S. Cohen, Robert I. Lerman, and Samuel A. Rea, *A Micro Model of Labor Supply* (Washington: Bureau of Labor Statistics Staff Paper 4, U.S. Department of Labor, 1970), p. 23.
48. Stiglitz, "Theories of Discrimination and Economic Policy," p. 21.

IV. SUMMARY

In the competitive, Becker-type, model, competition is assumed in both the supply and demand sides of the market. The competitive model approaches discrimination from the demand side. With taste for discrimination as one of the arguments in the firms' demand function, the discriminating group must be willing to forego money income in order to satisfy the taste for discrimination.

The monopsony model approaches labor discrimination form the supply side of the market. Instead of having a taste for discrimination as a variable in his demand function, the employer observes differencens between the supply characteristics of the two labor groups. The differing supply characteristics are an enabling factor or force confronting the employer. The profit maximizing firm might or could seize upon the opportunity to pay unequal wages to two units of labor performing identical labor tasks.

In the competitive model, differences between the two labor groups are not perceived. That is, the firm does not see a diffeence between the productivity of the two units of labor. The discrimination is attributable to the firm's taste for discrimination. Consequently, discrimination is an inherent part of the Becker model.

In the monopsony model, the firm is attempting to maximize its profits by responding to the different supply characteristics of the labor groups. To integrate discrimination into the monopsony model, separate labor groups must exist, and they must have different labor supply elasticities.

The condition of distinct labor groups plays the same role in the labor market as distinct markets play in the discriminating monopolist case in the product market. By not being able to obtain membership in the labor group receiving the higher wage, the unit of labor belonging to the discriminated against group cannot escape the lower wage.

In addition to the above condictions, it is necessary that the labor supply curve be positively sloped. If this were not the case, then either constant cost or warges would be present or the employer would not have monopsony influence in the labor market.

The monopsony influence of the firm is deteched in its efforts to crowd or confine a specific labor group into certain occupations. By restricting entry into occupations reserved for whites which may be considered prestigious, or of a social position not conceived acceptable to blacks, monopsony power is effected. Thus occupational discrimination is an integral part of the monopsony model.

The competitive model developed by Becker envisions two societies initially in isolation with given endowments of labor capital. Each society produces only one commodity. Thus trade in commodities is not possible. White society is assumed to be capital intensive relative to the black society. Without discrimination, white society would trade some of its capital for some of blacks' abundant labor. Equalization of relative factor prices results.

But if white society elects to discriminate against the black society by limiting the exchange of labor for capital, whites must be willing to forego money income to satisfy their taste for discrimination. With discrimination, whites trade less of their capital for black labor. The result is a relatively lower payment to white capital. If trade were unrestricted, whites would be able to receive a higher payment for their capital in the black society. The money income white society gives up to satisfy its taste for discrimination is the lower payment to capital.

The Becker model is open to several important criticisms. Becker assumes the white and non-white societies are independent. But are the two societies really independent? With whites the obvious dominate group, they possess the ability to control the amount of resources allocated to essential and fundamental programs and activities in the non-white society. Resourced devoted to black education, health and welfare programs are very much in the control of white society. Such control implies a degree of power – monopsony power. Consequently the independence assumption is open to serious question.

Becker's model assumes only trade in factors of production. This is a very restrictive assumption. The assumption allows physical contact between whites and non-whites. They connot avoid each other by trading commodities. Whites can avoid associating with blacks only by restriting their exchange for white capital. If the competitive model is expanded to permit each society to produce more than one good, then white and black labor can contact and still reap the benefits of free trade.

Assuming the competitive model is correct, why does discrimination continue to exist? Becker assumed constant returns to scale. In such a case, in the long run the firms with the least taste for discrimination would be the only survivors. Assuming there are some firms with no taste for discrimination, discrimination would be eliminated over the long run. The continued existence of discrimination implies that the constant returns to scale assumption must yield to increasing returns to scale. With increasing returns to scale, descriminatiors and non-discriminators can coexist in the market.

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