LABOR MARKET DISCRIMINATION, PAY INEQUALITY, AND EFFORT VARIABILITY: AN ALTERNATIVE TO THE NEOCLASSICAL MODEL

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INTRODUCTION

Pay inequality between women and men for market work continues to be a well-documented central characteristic of the market economy.[1] Its causes, in particular the extent to which it is a product of labor market discrimination, continue to be debated.[2]

One apparent problem with many of the theories which relate gender pay inequality to labor market discrimination is their difficulty in explaining its persistence *over time* in the face of competitive pressures. Gary Becker's [(1957) 1971] classic work on labor market discrimination has served as the basis for many of these theories, which ultimately rely on the persistence of market imperfections.[3] On the other hand, theories which are better able to explain the endurance of pay inequality over time — as a relatively stable equilibrium solution for the price of labor inputs — have relied largely on supply-side arguments, related to human capital formation or the specialization of women in housework.[4] Such theories view pay inequality as the payment of different wage rates for labor of differing relative marginal productivities. From this perspective, labor market discrimination is not the *ultimate* cause of pay inequality. Rather, if discrimination is of any consequence it is in the socialization of women *outside* the labor market to engage in particular labor market or household tasks which ultimately result in the development of sex-based labor productivity differences and concomitant gender pay inequality.

All of these models of pay inequality have difficulty explaining the persistence of pay inequality in the face of competitive pressures and the improvement in information available to economic agents. This is not to say that market imperfections, which of course exist, do not play an active role in maintaining gender pay inequality. However, in theory, it is possible to show that pay inequality *caused* by discrimination *in the market place* can explain long-run pay inequality even in the face of strong competitive pressures and improved information.

The model developed in this article builds on different and more realistic behavioral assumptions than those which underlie the standard economic theories of

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discrimination.[5] Its basic proposition is simple: once discrimination leads women to be paid less than men, women become less productive than men. In this case, hiring lower-paid women does not give non-discriminating employers a competitive advantage. Pay inequality becomes an equilibrium solution which cannot be eliminated by competitive pressures. These results can be generalized to include any pay inequality in which one group is subject to discrimination.

DISCRIMINATION AND PAY INEQUALITY

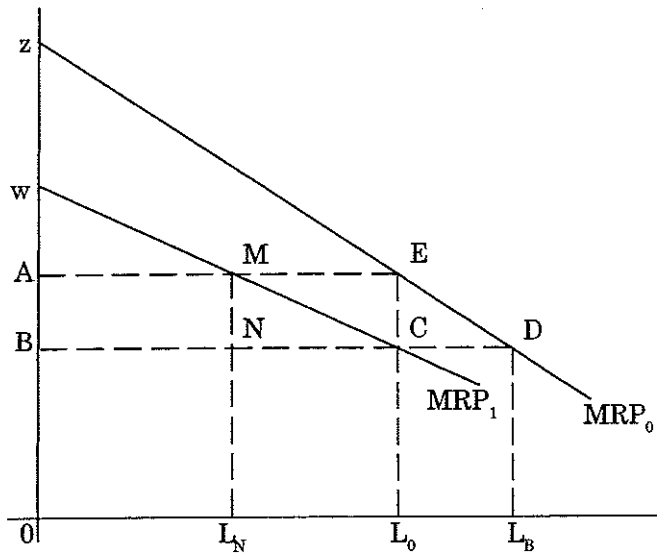
Discrimination in the labor market has been interpreted as the payment of different wage rates to equally productive individuals. The individual engaged in discriminating, the individual with a 'taste for discrimination' as it were, must act as if he or she is willing to pay for preferring one group over another — where the two groups have the same productivity characteristics [Becker, (1957) 1971, 14; Becker, 1985, S42]. In Gary Becker's discussion of discrimination, employers do not necessarily maximize profits, for discriminating employers must forfeit profits [Becker, (1957) 1971, 40]. In Arrow's [(1972) 1980; 1973] articulation and elaboration of the Becker model, employers are utility-maximizers, where utility is a positive function of profit and a negative function of psychic costs, expressed in terms of monetary equivalents, of employing the individual or group whose employment yields a negative utility. This negative utility represents an additional cost, for example of hiring women, to a discriminating employer. This negative utility can be expressed by the 'coefficient of discrimination'. For this reason, the exercise in short-run utility maximization, in which the capital stock is held constant, reduces to an attempt to maximize the difference between total revenue and total costs. This can be expressed as

$$\Pi = (P \cdot Q) - FW(1+d) - M(1+d), \tag{1}$$

where Π is profits, P is product price, Q is quantity of output, F is female employees, W is the wage rate, and d is the coefficient of discrimination. When a positive psychic cost is associated with the employment of women and none with the employment of men, the time costs to the discriminating employer of employing women whose monetary wage is the same as that of men becomes greater than the time costs of employing men.

In the basic Becker-Arrow model of discrimination one assumes perfect competition in the product market. The two groups are also equally productive; the wage rates are given to the employers (by the market, by legislation, or by the negotiation process); and all plants being compared are identical (characterized by the same production function). Given these assumptions, the utility-maximizing employer must equate the marginal cost and marginal revenue product of the last worker employed, where the marginal cost of labor incorporates the marginal disutility of employing a member of a discriminated group. Moreover, the marginal cost of each employee must be equal. This type of behavior yields a pay ratio:

FIGURE 1
Pay Inequality, Employment, Productivity, and Profits



(2) $$W_F/W_M = [W_M - W_F(d)]/[W_F + W_F(d)].$$

Here, W is the wage rate, M stands for male employees and F for female employees, and d is the coefficient of discrimination. Throughout the paper I use women as my proxy for the discriminated group. When a positive psychic cost is associated with the employment of women and none with the employment of men, women are paid less than men to an extent specified by the coefficient of discrimination, which represents the psychic costs of employing women to discriminating employers.

Graphically, this argument can be expressed by examining the employment of women and men separately. Each group of employees is assumed to be characterized by the same marginal revenue product curve (since men and women are assumed to be perfect substitutes), and all discriminators are characterized by the same coefficient of discrimination against women. Non-discriminating employers associate no positive psychic benefits *per se* from employing men; their d is zero. In Figure 1, MRP_0 is the marginal revenue product curve for both women and men. The wage rate and the marginal revenue product is measured along the vertical axis and hours of labor employed along the horizontal axis. If the wage rate of males is given by 0A, $0L_0$ hours of male labor are employed by the discriminating employer. The same number of hours of male labor are employed by the non-discriminating employer if *no* females can be hired. In this case, *ceteris paribus*, both sets of firms earn the same profits and incur the same production costs. With respect to the employment of women, however,

the situation changes. The monetary wage of women is given by 0B. It is less than 0A by $W_F(d)$, the psychic costs of employing women. The discriminating employer employs $0L_0$ hours of female labor, but the non-discriminating employer employs $0L_B$ hours of female labor. The former employer employs fewer women than the latter, because the costs of employing women, monetary and psychic combined, are greater.

Since the monetary costs of employing women are the same for both groups of employers, the same unit costs of employing female labor are incurred by both. However, the non-discriminating employer benefits from the extra profits (ECD) earned by employing the additional hours of female labor (L_0L_B). This in itself is enough to give the non-discriminating employer a competitive advantage over the discriminator. The extra profits can be used to cut the product price or to invest in growth or in new cost-effective technology. But the non-discriminating employer, if the employment of women is a possibility, will employ women as opposed to men to produce output as long as they are available at a lower monetary cost. The non-discriminating employer's female employees, who serve as substitutes for male employees, provide this employer with both higher profits and lower unit costs. Unit costs will be lower by AB. Herein lies the major competitive advantage. It yields, in the long run, the elimination of pay inequality between women and men, but only if non-discriminating employers exist or can come to exist in the market place. This point has been long recognized in the literature, inclusive of Becker [(1957) 1971, 20, 44] and Arrow [(1972) 1980, 124, 126; 1973, 10].

Pay equality is eliminated when the non-discriminating employer expand plant size or as more non-discriminating employers enter into the relevant industries to take advantage of relatively inexpensive female labor. This bids up the price of female labor and bids down the price of male labor. Discriminating firms will be eliminated, or they will only employ male labor once pay equality is achieved—labor markets will become segmented. These results are complicated but not changed in kind once one allows for employers to be characterized by different coefficients of discrimination. In this case, employers with the lowest coefficient of discrimination determine the extent of pay inequality in the long run. Such employers will hire the lower-priced female labor until the pay ratio of female to male wages is equal to that of the lowest coefficient of discrimination employer(s). When this is zero the degree of pay inequality will be zero as well.

The extent to which pay inequality is established in this model is then ultimately determined by the coefficient of discrimination of the marginal employers, by the elasticity in the supply of such employers, and by the degree to which unit costs are independent of output. The latter is related to the production function of those plants relevant to the employment of the discriminated group. If the production function is linear homogenous, the marginal employer — the employer with the lowest discrimination coefficient — will produce all the output, since unit costs would be lowest and unit costs would be independent of output. If production functions are not linear homogenous, the *existing* marginal employer will not produce all the output and pay inequality need not fall to the level of the marginal employer's coefficient of discrimination. However, if a sufficient number of new employers characterized by

the marginal employer's coefficient of discrimination enter the relevant industries in the long run, it is possible for pay inequality to be reduced to its lowest possible rate. Of course, if the coefficient of discrimination is zero, there would be no pay inequality in the long run.[6] Given the theory, this does not appear to be an unreasonable long-run scenario.[7]

EFFORT DISCRETION, DISCRIMINATION AND LONG RUN PAY INEQUALITY

To eliminate pay inequalities due to labor market discrimination, the relatively non-discriminating employers must possess some economic advantage over their discriminating counterparts. But this need not always be the case. Indeed, in the neoclassical model of pay inequality, such an advantage exists largely because it is assumed that there is no relationship between labor compensation, the organization of the firm, and the effort of economic agents per unit of time in the production process and, therefore, between wages, organization, and labor productivity. If such a relationship does exist, changes in wage rates and/or in the organization of the firm would, through labor productivity, affect unit and marginal costs of production.

It has long been recognized in the *X*-efficiency [Altman, 1990; 1992; Button, 1989; Frantz, 1988; Leibenstein, 1966; 1974; 1987; Rozen, 1991; Tomer, 1987] and in the efficiency wage literature [Akerlof and Yellen, 1986; 1990; Bowles, 1985; Bulow and Summers, 1986; Leibenstein, 1974], both of which are constructed on solid empirical foundations, that labor productivity is not simply a function of technology, capital intensity, and plant size. Labor productivity is also affected by the quantity and quality of effort per unit of time (effort intensity) contributed to the process of production. *Ceteris paribus*, the more effort applied by economic agents, the greater the labor productivity. The extent to which productivity increases as a consequence of effort intensity depends on the elasticity of labor productivity with respect to changes in effort. Therefore, once effort per unit of time is variable and a function of wages and/or firm organization, labor productivity becomes a function of wages and/or firm organization through the *intermediary* of effort intensity; and this indirectly affects production costs [Arrow, (1972) 1980, 126]. The introduction of effort variability allows for an explanation of pay inequality that originates with labor market discrimination and is also stable over the long run, even in the face of stringent competitive pressures.[8]

The Fair Wage Hypothesis, Discrimination and Pay Inequality

An equilibrium theory of long-run discriminatory pay inequality can be built upon the fair wage hypothesis of Akerlof and Yellen [1990].[9] This hypothesis is itself derived from a rich sociological and psychological literature on human behavior. Akerlof and Yellen argue that effort varies positively with the wage rate and that the worker will only contribute full effort to the production process if the wage rate is perceived to be fair. If the wage rate falls below the fair wage, effort intensity falls proportionately:

"...when people do not get what they deserve, they try to get even." [Akerlof and Yellen, 1990, 256]. The fair wage is defined to be:

$$W^* = W/e_m, \tag{3}$$

where W^* is the fair wage, W is the received wage, and e_m is the energy or effort supplied per unit of market time. The fair wage is then simply a particular rate of compensation per unit of effort that is deemed fair by the employee.

In this model one can assume that the product market is perfectly competitive and that the employer attempts to choose a wage rate which minimizes the marginal cost of effective labor (W/e_m). The wage rate which minimizes the marginal cost of effective labor is *not* unique [Akerlof and Yellen, 1990, 268, note 9, 274].[10] Any wage rate below the fair wage yields the same minimum cost. As the wage rate falls, effort intensity declines sufficiently so that the marginal cost of effective labor does not change. Moreover, if the employer's profit is not affected by the wage rate, the employer chooses to pay the worker the fair wage [Akerlof and Yellen, 1990, 274].

If, however, as I am assuming, there are employers who have a taste for discrimination, they will prefer not to pay a fair wage, but will be utility maximizing as in the Becker-Arrow model. Women will be paid less than men. The effort intensity of female employees will fall as a result. This constrasts sharply with the original neoclassical model developed by Becker, in which a lower wage for female employees does not affect effort intensity. By reducing their effort intensities, the lower wage for women reduces their labor productivity, so that the costs and profits associated with female employment remain at par with those associated with the employment of the higher priced men. In this scenario it is feasible for non-discriminating employers who have a preference for paying a fair wage to pay women the same wage as men. In equilibrium, therefore, only discriminating employers will continue to pay women a lower wage. However, given the stipulated relationship between wages, effort, and productivity, either a fair or an unfair (discriminatory) wage is consistent with the long-run competitive well-being of the firm.

X-Efficiency Theory and Pay Inequality

If employers are modelled as utility as opposed to profit maximizers, even non-discriminating employers may pay women less than men in equilibrium. A basic premise of *X*-efficiency theory is that wage rates can affect productivity through the intermediary of firm organization by affecting effort intensity.[11] *X*-efficiency theory further assumes that employers maximize utility, not *necessarily* profits. It would, for example, modify Equation (1), above, by including leisure and stress in the employer's objective function, with leisure positively and stress negatively related to utility [Altman, 1992]. To the extent that increasing employees' effort per unit of time requires less leisure and more stress on the part of employers, they will prefer lower-wage/lower-effort intensity employees so long as this does not make them uncompetitive in terms of costs or profits [Altman, 1990; 1992]. There is no reason to

believe that such an employer would *want* to pay a fairer wage. This stands in marked contrast to the suggestion, contained in the fair wage-effort hypothesis, that the employer would *prefer* to pay a higher wage if this did not affect profits.

To the extent employers, including non-discriminating employers, prefer to pay workers (female *or* male) lower wages, pay inequalities associated with labor market discrimination would not only be consistent with long-run equilibrium in *X*-efficiency theory, as in the fair wage hypothesis, it would be pervasive, because lower rates of pay for women would be consistent with utility maximization on the part of both discriminating and non-discriminating employers. Thus the pay inequalities caused by discrimination can be expected to persist as long as discriminating employers can affect the rate of pay of female employees characterized by the same basic productivity as men.

The Basic Model

Whether one uses the fair wage hypothesis or *X*-efficiency theory to motivate this model of long-run pay inequality, the core results remain unchanged. These are driven by the assumption that effort is a variable which is affected by the wage rate and firm organization. Changes in effort intensity affect production costs which, in turn, determine the ability of the competitive process to eliminate pay inequality due to labor market discrimination.

Average costs can be expressed as

$$(4) \qquad TC/Q_e = [FC + (N \cdot W)]/\dot{Q}_e = FC/Q_e + W/(Q_e/N),$$

where TC is total cost, Q is total output, FC is fixed costs, N is total labor input, W is the labor compensation per unit of labor input (our proxy for which is wage rates), and e is effort intensity ($0 \leq e \leq 1$). Marginal costs can be expressed as

$$(5) \qquad MC = \Delta TC/\Delta Q_e = \Delta FC + \Delta(N \cdot W)/\Delta Q_e = W/(\Delta Q_e/\Delta N).$$

Reducing the wage rate while holding labor productivity constant reduces unit and marginal production costs. This provides a low wage firm with a competitive advantage. If, however, as wage rates fall, labor productivity diminishes sufficiently to offset the decline in labor cost due, for example, to a reduction in effort intensity, unit and marginal costs would not decline. In this case the employment of relatively low priced labor need not provide an employer with an economic advantage over another employer who employs high priced labor.

If women are relatively poorly compensated because of discrimination, and consequently they reduce their effort intensity (unlike their behavior in the Becker-Arrow world), non-discriminating firms need not realize a competitive advantage over discriminating firms by employing women. Once one assumes that productivity is influenced by wage rates and the organization of work, the advantage of the non-discriminating employer dissipates quickly. First, from Equations 4 and 5, to the

extent that the fall in female productivity offsets the fall in the wage rate, the non-discriminating employer has no cost advantage over the discriminating employer. Therefore, the employment of women *instead of men* does not yield a competitive cost advantage to the non-discriminating employer.

This is illustrated in Figure 1, where the discriminator employs $0L_0$ of men at wage rate 0A earning profits of ZAE. If the non-discriminating employer hires women at the lower wage rate 0B, only $0L_0$ of women are employed since the lower wage results in an inward shift of the marginal revenue product curve for women from MRP_0 to MRP_1, yielding a profit of only WBC, where WBC is not necessarily greater than ZAE. In contrast, in the Becker-Arrow world the non-discriminating employer would hire $0L_B$ of women, earning a profit of ZBD, since the relevant labor demand curve would be MRP_0 (the lower wages paid to women are not expected to affect their productivity negatively).

When wage rates or firm organization affect labor productivity through its impact on effort intensity, the employment of women *instead of men* does not enable non-discriminating employers to drive the discriminators out of business. Nor do they have the incentive to bid up women's wages by employing women as opposed to men. In other words, low wage labor is no longer necessarily cheap labor, and the non-discriminating employer loses the incentive to employ members of the discriminated group. Likewise, employers with the lowest discrimination coefficients do not have the means to reduce, through the competitive process, pay inequality. Pay inequality caused by discrimination is stable even in the long run, and consistent with pay inequality for the same job or for different jobs of the same *potential* productivity. In this sense, whether or not segmented labor markets develop does not affect the extent or the stability of pay inequality. As long as the supply of female labor or that of any discriminated group is large enough to require their employment by discriminating employers at prevailing low wage rates, pay inequality will persist.

CONCLUSION

A basic finding of this paper is that pay inequality caused by discrimination in the labor market can persist even under the assumption of perfect competition in the product market. Once one admits the possibility that effort intensity can be a variable input in the production process that is at least partly a positive function of movements in labor compensation, one removes the primary incentive to rid the market economy of pay inequality due to labor market discrimination from the market place.

This model stands in sharp contrast to standard neoclassical theory, which assumes that effort inputs are fixed at some optimum level irrespective of the wage rate. In this case, if discriminating employers pay the discriminated group less than the non-discriminated group and regard the marginal cost of the discriminated group to be greater than their actual labor compensation (by the coefficient of discrimination), these employers provide the non-discriminating employers with the means either to bankrupt the discriminators or to bid up the wages of the discriminated group to that of the non-discriminated group. In my model, the extent

to which pay inequality is stable over time depends, of course, on the degree to which effort intensity varies with changes in labor compensation and the extent to which labor productivity varies with effort intensity. This relationship is ultimately an empirical question.

The model presented in this paper allows us to explain the existence of long-run pay inequality which cannot be explained by non-market supply-side factors. Moreover, this model also suggests that, to the extent that labor market discrimination causes differences in productivity to develop, one should not treat pay inequality which is *consistent* with productivity differences as necessarily indicative of an absence of labor market discrimination. Indeed, as demonstrated above, labor market discrimination can, in itself, be the cause of differences in productivity. This direction of causality runs contrary to what standard theory accepts as *normal*, given its standard assumption about effort intensity. To determine whether pay inequality is a product of labor market discrimination, therefore, one must determine the extent to which differences in productivity between groups are a product of differences in labor compensation which, in turn, are a product of labor market discrimination.[12] The model presented here, therefore, calls into question those empirical tests of labor market discrimination which are based on models that assume that pay differences between economic agents that are correlated with productivity differences cannot be a product of labor market discrimination. To know anything it is necessary to determine more carefully the causal link between discrimination, pay inequality, and productivity differentials.

In a world where labor market discrimination exists and effort intensity is affected by labor compensation, one cannot expect market forces, no matter how competitive, to eliminate pay inequality due to discrimination. Furthermore, reducing market imperfections cannot be expected to eliminate such pay inequality. This is not to say that market pressures cannot contribute to a reduction in pay inequality in the long run. However, to eliminate pay inequality that results from labor market discrimination would require much more than that. Critical to an elimination of this type of pay inequality is the development of mechanisms which would prevent the wages of those who are discriminated against from falling below the wages of others who are characterized by the same basic productivity or, alternatively, which would prevent discriminating employers from actualizing their preferences; for once such discriminatory preferences are actualized, the market will have a difficult time in eliminating the pay inequality they produce.

NOTES

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1. See Gunderson [1989, 47] for more contemporary estimates of gender pay inequality for relatively developed market economies as well as the former U.S.S.R. See Altman and Lamontagne [1995] and Goldin [1986; 1990] for historical gender inequality estimates for Canada and the United States respectively. See also Groshen [1991] for a detailed empirical analysis of labor market segmentation within and across firms and occupations.
2. Theories of labor market pay inequality are critically discussed in Bergmann [1989], Cain [1986], Darity [1989], Lamond [1977], and Marshall [1974].
3. In elaborating upon Becker's influential work, Kenneth Arrow [(1972) 1980; 1973] relies on the persistence of imperfect information over time and, thus, on the persistence of statistical discrimination, or on the costs of hiring and firing workers (nonconvexities in employment) to explain the fact that the market has not forced the elimination of pay inequality. Lester Thurow [1975] also relies on the persistence of imperfect information and statistical discrimination to explain pay inequality. However, Thurow also argues that wage competition is typically unimportant, even over the long run. This prevents women, for example, from bidding low for what will become a high wage job. By bidding low, women would be compensating their employers for their negative perceptions of the potential lower productivity of *individual* women. Barbara Bergmann's [1971, 1986] classic research on labor market segmentation argues that discrimination causes the segmentation of labor markets which, by increasing labor supply (shifting the labor supply curve outward) in one market and by reducing it in another (shifting the labor supply curve inward) from what it would be in a world with an integrated labor market, results in pay inequality. However, labor market segmentation must persist over time; the lower paid women must be *kept* from entering the higher paid labor market dominated by men. See also note 2 above and note 8 below.
4. Gary Becker [1985] argues that married women can be expected to be paid less than men due to their specialization in household work in general and child-rearing in particular. This has the effect of leaving women with less effort per unit of time available for market work and less productive than men *per hour worked*. *Ergo*, women are paid less than men. See also Fuchs [1988] who argues for explaining that portion of pay inequality between men and women which cannot be accounted for in terms of differences in schooling and work experience, etc., largely in terms of women's specialization in child care.
5. The model developed in this paper draws particularly upon some of the recent research on *X*-efficiency theory [Altman, 1990; 1992], the fair wage-effort hypothesis [Akerlof and Yellen, 1990] and an important paper exploring the significance of effort variability in the work place by Becker [1985]. See also a recent paper by Drago and Heywood [1992].
6. The above argument is drawn from but not identical to Arrow's [1973, 6-8].
7. Becker [(1957) 1971, 44] very skillfully elucidates some of the long run dynamics involved in establishing a long run equilibrium rate of pay inequality: "If all firms had the same linear and homogenous production function, firms that discriminated would always have larger unit net costs than firms that did not. The smaller (in absolute value) the DC [discrimination coefficient] of any firm, the less would be its unit net costs. The firm with the smallest DC would produce total output, since it would undersell all others; therefore the equilibrium MDC [market discrimination coefficient] would equal the firm's DC...If firms did not have homogenous production functions, unit costs would rise with output, and the firm with the smallest DC would not produce everything...In general, firms with DC's [sic] less than the MDC are profitable and tend to expand relative to other firms. The ease

with which a firm expands is determined by the relation of unit costs to output; if unit costs are independent of output, expansion is easy; if costs rise sharply with output, expansion is difficult. Firms with small DC's [sic] expand more in comparison with other firms, the less this expansion increases their costs relative to other; hence production conditions facing firms must be important determinants of the MDC." See also, Arrow [(1972) 1980, 124, 126].

8. In an effort to explain the persistence of gender pay inequality between women and men of the same productivity characteristics, Becker [1985, S43, S49, S52-53, S55] has more recently argued that labor productivity is affected by effort intensity. His focus is not on intrafirm dynamics but rather on the allocation of time and effort to non-market activities. A critical assumption of Becker's model [1985, S45] is that each identical economic agent completely allocates his fixed amount of energy among an array of market and non-market activities, inclusive of leisure. Married women can be expected to be less productive than married men because women choose to devote a disproportionate amount of their time and effort to household work. Thus less effort is available to married women to devote to market work, resulting in their market-related effort intensity being less than married men's [Becker, 1985, S52-S53]. In Becker's model, effort devoted to market activities is determined by the amount of effort allocated to non-market activities. In equilibrium, married women will be paid less then married men even *in the absence of labor market discrimination* because they are less productive than their male counterparts. This model allows the economic agent to choose to not exhaust the effort constraint either within each period of time or over the life-cycle of the economic agent; an individual needs to be working as hard as possible or at what one might refer to as the effort possibility frontier. An economic agent who works relatively hard in the household does not necessarily devote relatively less energy to market activities. The married woman can be as productive as the married man if she applies more *total* effort across all activities than the married man, working as hard as the married man in market activities and harder in household activities. He is left with more residual effort (leisure) than the married woman and she is operating closer to the effort possibility frontier. Indeed, some empirical support, derived from 1973 and 1977 U.S. survey data, now exists to support the hypothesis that women who engage in household work do not do so at the expense of the energy devoted to labor market activities [Bielby and Bielby, 1988, 1043, 1050, 1055; Bielby, 1991, 100]. The allocation of effort between market and non-market activities does not appear to hold the key to an explanation of the persistence of gender pay inequality.
9. Reich [1981, 204-215] also develops a model of pay inequality in which effort is variable, but it is quite distinct from the model of pay inequality presented in this paper. In Reich's formulation, effort intensity is negatively related to the bargaining power of workers. Reich assumes that as bargaining power improves, effort intensity declines and this, *ceteris paribus*, reduces profits. To reduce the bargaining power of workers, employers set out to pay black and white workers different wages, with the white workers being paid a premium above their marginal product. This tends to divide workers and reduce their bargaining power. For this model to work, firms must be integrated by race (or by sex). Otherwise, workers will fail to develop feelings of resentment and antagonism which causes a reduction in their bargaining power. Presumably, labor market market segmentation increases the effort intensity among all workers and increases the overall profits of the discriminatory employers. In this model 'unfair' wages seem to have the effect of increasing the productivity of labor. It also predicts that racist firms should drive out non-racist firms from the market place and that the winning firms should be highly integrated with a record of poor if not abysmal labor relations. These predictions do not seem to be consistent with the reality of labor market segmentation: fair wages inducing higher productivity, and unions having a positive effect on productivity.
10. The traditional efficiency wage theory assumes that profit-maximizing employers choose that wage rate, the efficiency wage, which will minimize labor cost per efficiency unit (the real wage divided by effort per unit of time). There is a *unique* wage rate consistent with profit maximization. Under such assumptions one would not expect profit-maximizing employers, such as non-discriminating employers, to pay women less than men if the wage paid to men is the efficiency wage. Moreover, discriminating employers, by paying women less than men, will be at a competitive disadvantage. By paying women less than the efficiency wage, women will supply less effort per unit of time to market work, shifting their marginal revenue product curve inward and yielding higher labor and unit costs than would otherwise exist. Pay inequality could not, therefore, persist in the long run. On this point see Bullow and Summers [1986, 398].

11. Harvey Leibenstein pioneered *X*-efficiency [1966] as well as efficiency wage theory [1974]. See Button [1989] for a collection of some of Leibenstein's most important contributions to the subject. See also Leibenstein [1987].
12. On a related point Becker [1985, S42] suggests that if women and men are characterized by the same basic productivity and women are paid less than men due to discrimination, this lower rate of pay might induce women to specialize in household work, reducing their effort intensity in market work and thereby reducing their productivity in market work relative to that of men. This would further increase the extent of pay inequality. In this case, Becker points out, a decomposition of the pay differential would attribute most of the pay differential to differences in human capital. This would be in spite of the fact that [Becker, ibid.] "...the average earnings of men and women would be equal without discrimination...More generally, discrimination and other causes of sexual differences in basic comparative advantage can be said to explain the *entire* difference in earnings between men and women, even though differences in human capital may appear to explain most of it."

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