5EN355 Labor Economics
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SUGGESTED SOLUTIONS TO HOMEWORK ASSIGNMENT FOUR

1. What is the discrimination coefficient?
   The discrimination coefficient measures the strength of discriminatory preferences by the amount of income an employer (or co-worker or customer) is willing to sacrifice to maintain distance. The discrimination coefficient (d) is a number between 0 and 1 and it is based on the intensity of the disutility experienced by the individual discriminator.

2. "In recent years, the wage gap between skilled and unskilled workers in the United States has grown. This growth means that measured labor-market discrimination against unskilled Mexican immigrants is also growing." Comment on whether the second part of this statement is implied by the first part.
   Labor-market discrimination is said to exist when workers who are productively equivalent are systematically paid different wages based on their race or ethnicity (or some other demographic characteristic unrelated to productivity). It is true that rising inequality causes a greater gap between the average wages of native whites and unskilled Mexican immigrants, because native whites are better educated and more skilled, on average. However, the existence (and size) of labor-market discrimination depends on the wage gap between unskilled native whites and unskilled Mexican immigrants (that is, between two productively equivalent groups)-so the facts quoted in the statement are not sufficient to determine if labor-market discrimination is growing.

3. Suppose the hourly marginal revenue product of all workers in a particular labor market is $MRP_L = 20–L$, where L = number of workers. The hourly wage rate for women in this market is W =\$5.75. What is the gap between MRP_L and wage in this labor market if $L = 12$? Is this gap a reliable measure of discrimination against women in this market?
   $MRP_L = 20 - 12 = \$8$
   The gap between marginal revenue product and wage is thus \$2.25. In a competitive labor market, firms should hire labor until wage = MRP_L. If the market is competitive, then it appears that the employers are not doing this and that they could be devaluing MRP_L because of their prejudice. That is, they are acting AS IF women are less productive than they really are. However, there are other reasons the wages might be less than MRP_L. Workers in whom employers have invested will have wages less than MRP_L. Workers who are being paid on an underpayment-followed-by-overpayment pay scheme will be paid less than MRP_L during the underpayment time frame, and more than MRP_L later on. Also, workers in monopsonistic labor markets will be paid less than MRP_L. Thus, the observation that wages are less than MRPL does not necessarily imply discrimination.

4. Suppose black and white workers are complements in that the marginal product of whites increases when more blacks are hired. Suppose also that white workers do not like working alongside black workers. Will discrimination by white employees lead to the firm choosing to completely segregate its workplace? Does it create a wage differential between black and white workers?
   Since blacks and whites are complements, there is an incentive for employers to employ blacks and whites together in the work place if the increase in productivity achieved by integrating the work force is higher than the extra wages employers must pay white workers to compensate them for working alongside blacks. The interpretation of the wage differential between black and white workers is more difficult. The wage differential between the two groups will reflect not only the effect of discrimination (a higher wage for whites to encourage them to work alongside blacks), but also the effect of differences in productivity. Overall, however, it is clear that whites must be paid a compensating differential.

5. Suppose the firm's production function is given by $q = 10(Ew + Eb)^{\frac{1}{2}}$, where E_w and E_b are the number of whites and blacks employed by the firm, respectively. The market wage for black workers is \$10, the market wage for white workers is \$20, and the price of each unit of output is \$100.

   (a) Calculate the marginal product of labor.
   $MP_b = MP_w = \frac{5}{\sqrt{E_w + E_b}}$

   (b) How many workers would a firm hire if it does not discriminate? How much profit does this nondiscriminatory firm earn if there are no other costs?
   $w_b < w_w \Rightarrow w_b = p \cdot MP_E = \frac{100 \cdot 5}{\sqrt{E_b}} = 10$
   $E_b = 2500, q = 500, \pi = 25000.$

(c) Consider a firm that discriminates against blacks with a discrimination coefficient of 0.25. How many workers does this firm hire? How much profit does it earn?
$w_b \cdot (1+d) < w_w \Rightarrow w_b = p \cdot MP_E = \frac{100 \cdot 5}{\sqrt{E_b}} = 12.5$
$E_b = 1600, q = 400, \pi = 24000.$

6. Suppose a restaurant hires only women to wait on tables, and only men to cook the food and clean the dishes. Is this most likely to be indicative of employer, employee, customer or statistical discrimination?
If this hiring pattern is due to discrimination at all, it is most likely due to customer discrimination. It is not employer discrimination as the employer is hiring both men and women. It is further unlikely to be statistical discrimination as an employer would likely be able to determine in a short time what would happen if women became chefs or men waited on tables. The hiring pattern could result from employee discrimination as well, but this seems unlikely as wait staff and chefs/dishwashers interact on the job.