

How to Study for Chapter 23 Wage Differences

Chapter 23 continues the analysis of labor markets. It uses the tools developed in Chapter 22 to explain why some people or groups earn more income than others.

1. Begin by looking over the Objectives listed below. This will tell you the main points you should be looking for as you read the chapter.
2. New words or definitions and certain key points are highlighted in italics and in red color. Other key points are highlighted in bold type and in blue color.
3. You will be given an In Class Assignment and a Homework assignment to illustrate the main concepts of this chapter.
4. There are a few new words in this chapter. Be sure to spend time on the various definitions. There are no new graphs.
5. The teacher will focus on the main technical parts of this chapter. You are also responsible for the cases and the ways by which each case illustrates a main principle.
6. When you have finished the text, the Test Your Understanding questions, and the assignments, go back to the Objectives. See if you can answer the questions without looking back at the text. If not, go back and re-read that part of the text. When you are ready, take the Practice Quiz for Chapter 23.

Objectives for Chapter 23 Wage Differences

At the end of Chapter 23, you will be able to answer the following questions:

1. What are the factors that will affect the marginal revenue product of a worker? (In particular, what will cause this curve to shift?)
2. Use your answer to question 1 to explain why different people earn different wages in a market (for example, why do some people earn very high incomes?).
3. What is meant by "**general training**"? By "**specific training**"? What effect does each have on wage determination?
4. What is "**statistical discrimination**"? What effects does it have?
5. Explain the reasons that a college education increases one's income over one's lifetime.
6. What is "**human capital**"?
7. What is the **screening or signaling** theory?
8. Explain how **experience** increases one's income over one's lifetime.
9. What do companies give special rights on the basis of **seniority**?
10. Why are wages higher for people who work in unpleasant or risky jobs and lower for people who work in pleasant jobs?
11. Summarize by giving some hypotheses as to why men earn more than women or why whites earn more than minorities.

Chapter 23 Wage Differences (latest revision July 2004)

About two-thirds of all of the income earned in the United States comes from wages and salaries. For many families, wages or salaries generate nearly all of their income. So our question in this chapter is: "what determines people's wages and salaries?". **Why do some people or some groups earn more income than others?** In answering this question, we will

assume here that wages and salaries are determined in reasonably competitive labor markets. Considerations such as discrimination will be analyzed in Chapter 24. Wages and salaries are just prices, determined by demand and supply. We considered demand and supply in the last chapter. Now we can put them together.

Why do certain athletes or entertainers earn so much income? Alex Rodriguez, a baseball player, is said to earn in ten years an amount that would take the average doctor 750 years to earn, the average teacher 1,000 years to earn, and the average secretary 6,250 years to earn. In terms of the analysis we have used, this can be easily explained. The demand for a worker is determined by the **marginal revenue product** which, for Alex Rodriguez, is expected to be high. *Remember that the marginal revenue product is the marginal physical product times the price of the product.* The **marginal physical product** (addition to the number of paying customers) is likely to be high because Alex Rodriguez is expected to hit many home runs, drive in many runs, and contribute to many wins. Team wins will significantly increase the number of paying customers. The **price** people are willing to pay is also reasonably high because the demand for the games of winning baseball teams is high and also because baseball has considerable monopoly power. In addition, **the supply is very low** because there are not many people with the skills of Alex Rodriguez. **High demand and low supply cause the wage to be high.** The analysis is similar for any other highly paid athlete or entertainer. However, let us extend the analysis by examining wages differences between groups.

Test Your Understanding

CBS pays David Letterman \$31 million per year to do the David Letterman show at 11.30p.m. daily. Use the analysis of Chapter 22 to explain why the network would pay him that much money.

Case: The Earnings Gap between Men and Women

Through most of the 20th century, the average woman who worked earn just about 60% of the earnings of the average man. This 60% ratio was amazingly also found to exist at the time of the Industrial Revolution (late 18th century) and also in Biblical times. Some of this difference can be explained by the fact that many women worked part-time. But even among full-time workers (working at least 35 hours per week) a substantial gap in earnings existed. In recent years, the earnings of women workers have risen to over 70% those of men. For full-time workers, the earnings of women who work have risen to over 80% that of men. Therefore, there are two things we need to explain. First, why is there is gap in earnings between men and women who work? And second, why has this gap been getting smaller in recent years?

In order to explain the gap in earnings, let us focus on the demand for labor. Chapter 22 demonstrated that, in reasonably competitive labor markets, **workers are paid according to their marginal revenue products. One's marginal revenue product is the product of the price times the marginal physical product.** We can focus on each of these.

Let us begin with **the price**. One's wage would be greater if the price of the product one sells is higher (because the marginal revenue product would then be greater). **Therefore, one reason for the higher earnings of men might be that the prices of the products they produce are higher.** Men are still much more likely than women to work in manufacturing jobs. Until the 1970s or early 1980s, *many manufacturing companies operated in industries with little competition. The companies in these industries had market power --- the power to raise the*

price of the products they sell. These higher prices raised the marginal revenue products of the workers, causing their wages to rise. As noted, these workers were most likely to be men.

Since the 1970s, competition in many industries has increased. Much of this new competition has come from companies in foreign countries. *Increased competition has taken away much of the power to raise the price. So one reason for the narrowing of the earnings gap in recent years is the decline in prices caused by the increased competition.* The earnings gap has been narrowing perhaps as much because men have been losing ground as because women have been gaining ground.

The remainder of our analysis of the earnings differences between men and women will focus on the **marginal physical product**. In physical terms, why is one person or group more productive than another? Let us consider several possibilities.

The most obvious reason for the differences in people's marginal physical product would seem to be *differences in natural ability*. This would include size, strength, intelligence, personality type, and so forth. I am too short to be a basketball player, too small to be a football player, and, no matter how hard I practiced, could never hit major league pitching nor sing well nor play a musical instrument very well. I do not have the personality type to be a successful politician. However, **natural ability plays a small role in the differences in productivity**. And it certainly plays little role in explaining the productivity differences between men and women (and virtually no role in differences in productivity between various ethnic groups). Even differences in strength and size have become relatively unimportant as machines have replaced manual labor in many jobs that used to require considerable strength. (There are some sociologists who do argue that genetic endowment is the main reason for the differences in productivity and therefore in earnings. But their argument is not widely accepted.)

Another reason for differences in people's productivity was studied in Chapter 14. In the discussion of the production function, it was demonstrated that *workers would be more productive if they had more and better capital per worker to work with*. The American steel worker is more productive than the British steel worker because of more capital --- larger factories, more machines, and so forth. The Japanese steel worker is more productive than the American steel worker not only because they have more capital per worker (much larger factories) but also because they have better capital (more modern technology). Today's athletes are more productive than athletes of forty years ago in part because there are larger stadiums and in part because of the advances in television and radio programming. (The productivity of athletes is measured in people viewing games.) As noted in the last section, *men have been more likely than women to work in manufacturing jobs. Since these jobs usually involve large amounts of capital, while the service jobs in which most women work did not, this can explain part of the earnings gap between men and women.* In recent years, computer technology has increased the productivity of people in service jobs. These people are more likely to be women. *So the increased use of computer technology is one reason for the closing of the earnings gap between men and women.*

Yet another reason for differences in people's productivity in their *motivation*. Are there just poorly motivated workers or are there jobs that produce poorly motivated workers? One clue that **the problem of poor motivation is caused by the job, and not the worker**, came in the

Fremont area, near Oakland, California. General Motors had a large factory there with over 4000 workers. It was considered the least efficient automobile factory in the country. Finally, General Motors closed the plant. Some time later, General Motors formed a joint venture with Toyota called the New United Motors Manufacturing, Inc. (NUMMI). They opened in the same factory with the **same capital**. They hired back about 2,500 of the **same workers**. They operated the plant on the principles of Japanese management. Today, this plant (which produces the Geo) is one of the most productive in the country and almost as productive as the Toyota factory in Japan.

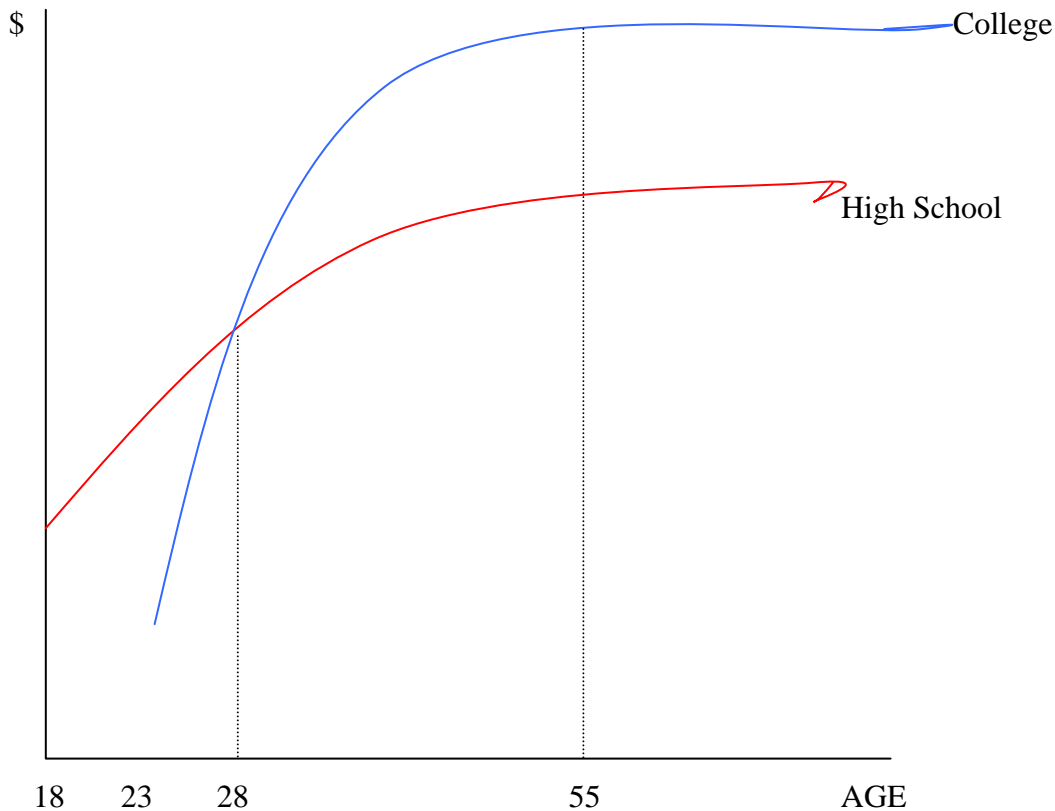
It is clear today that workers have considerable discretion as to how productive they are. Very few people work so hard that they come home totally exhausted every day. Most workers work hard enough to stay employed but know they could work harder if they had to. (This was shown very clearly at the beginning of World War II. Productivity in most American factories was significantly higher in December of 1941 and January of 1942 than it had been in November of 1941. Nothing that normally affects productivity could have changed much in just two months. The difference is that the American participation in the war began at the beginning of December of 1941. Before December, people were just working. Beginning in December, their work affected the survival of the country. Their productivity soared.)

What is it that will motivate workers to be productive in normal times? Most people want to be rewarded for their efforts. They want appreciation. They want the opportunity for advancement. *Research shows that workers are more productive if they are able to participate in the decisions that affect their jobs.* And, of course, workers want wages. If one asks workers, virtually all will say that they are not paid enough. So what is it about one's wage that affects one's productivity? *Research shows that most people evaluate their wages against reference groups.* We expect some people to be paid more than we are, some to be paid less than we are, and some to be paid about the same. For example, as a teacher, I know I will be paid less than a physician. This does not tend to reduce my productivity. I expect to be paid about the same as another teacher at the same level and to be paid more than teachers at lower levels. If I were to find that teachers at other colleges were earning significantly more than I am, my productivity could be affected greatly.

Ultimately, the main reason for differences in productivity involves **differences in skills**. Skills must be learned. We divide skills into two types. *General skills are skills that can be easily transferred between employers. General training involves the learning of general skills.* If I leave this job and move to another, the skills are still useful on the new job. Reading is the most general skill. Knowing double entry bookkeeping, contract law, and human anatomy are general skills. As a teacher, most of my skills are general. General skills are learned either through **formal education** or through **company training programs**. *Specific skills are those that cannot be transferred between employers. Specific training involves the learning of specific skills.* Knowing the procedures of the company you work for, knowing the nature of the people you work with or the specific nature of the customers, knowing the special characteristics of the product you produce or sell are example of specific skills. Specific skills are learned through **experience on the job**. We will consider formal education first. Then, we will consider company training programs and experience. Finally, we will consider experience.

Formal Education and Company Training Programs

Consider formal education as a financial investment. When you make the decision to go to college, you sacrifice a certain amount of money for fees, books, and so forth. More important, you sacrifice the income you could have earned by working (or by working more hours than you are currently working). Had you worked full-time, rather than come to college, we would expect your income to rise over time. This would be true because of the importance of on-the-job experience (to be discussed below). Therefore, each additional year that you choose to continue in school requires a larger and larger sacrifice in income. Once you finish college, you begin your career. You expect that your income will rise as a result of the education you received. And indeed, on average, your income will rise. **The gap between the income you would receive with a college education and the income you would receive with only a high school education will continue to widen each year up to about age 55.** The gap reached at about age 55 will then persist for the rest of your life.



Consider the total amount that you sacrificed as analogous to putting money into a savings account for each of these years. While the money is in your savings account, it is earning interest at a certain rate. Consider the additional income you receive after age 28 or so as analogous to taking the money out of your savings account. If you “put in” to your savings account the amount of your total sacrifice each year you are in college, “take out” of your savings account each year the amount of your additional income, and have zero left in your savings account at the time of your death, what interest rate did you earn? (Of course, you are putting the money into your education and not into a savings account. And you are getting your return by having higher income when you work and not by taking the money out of a savings account. But the interest rate idea still holds.) For much of the last 30 years, investing in your education has earned a return averaging around 7% per year after taxes. The return is over 10% per year today. Where can you put your money and earn 10% per year after taxes for the rest of your life? *Your college education is one of the best long-term investments you could make.*

Notice that you are required to pay for your education. You do so by paying fees, buying books, and so forth. You also do so by sacrificing income you could otherwise have made. Why does your employer not pay for your education? *The answer is that most of the skills you learn in college are general skills.* This means that they can be easily transferred to a different employer. Employers are afraid that, if they pay for your education, you will just leave and go to another company. The money they spent on your education would be wasted. Employers who will pay for your education are those who are certain that you cannot leave (the military, Major League Baseball) or are reasonably sure that you would not want to leave. **So, employees must pay for the acquisition of general skills.**

For most people who attend college, the education will lead to higher incomes. But why is this so? Most of you will realize already that college teaches very few job skills in the undergraduate years. Even people who study what they believe to be job-related subjects, such as Accounting, usually find that they have much to learn to be able to do a job. **Other than Engineering, Computer Science, and Accounting, one does not have to have any particular major to obtain a particular job.** In recent years, people admitted to medical school were more likely to be English majors than any other. And one can gain entry to graduate school in almost any subject with any undergraduate major. **So what exactly does your undergraduate education do to enhance your earnings later in life?**

There are two competing ideas about the answer to this question. One would be called *the human capital view*. Those supporting it argue that, while undergraduate education does not teach specific job skills, it does teach you how to think critically, how to analyze, how to obtain information needed, how to communicate well, and how to teach yourself what you need to know. (In your learning, you do most of the teaching of the material to yourself.) These skills are essential in being successful in any type of employment that will pay well.

The other view is called *the screening or signaling view*. Those supporting it believe that one of the main requirements for perfect competition does not exist in real labor markets: **companies do not have perfect information about job applicants.** It is argued that companies actually know very little about job applicants and that it would be very difficult or very costly for them to find out what they need to know. Therefore, it is argued that companies practice what is called *“statistical discrimination”*. *People are placed into groups --- groups to which they belong and which the employer can identify easily. People are then treated as typical of the*

group they are in. Consider two applicants for a job. If we knew everything we needed to know, we would know that they are identical. However, all we know is that both have Bachelors degrees --- one from Harvard and one from California State University – San Marcos. Who gets the job? Most would answer that it would be the one from Harvard. Why? It is not that teaching is better at Harvard than at California State University – San Marcos. In fact, it is not. To some degree, the facilities are better at Harvard; however, this is not the reason that the Harvard graduate would be hired. In this view, Harvard is much harder to get into than California State University – San Marcos. ***The school one graduates from serves as one screen. Another screening device would be grades.*** Two Harvard graduates might be the same. But if one has a 4.0 GPA while the other has a 2.5 GPA, the first is more likely to be hired. ***In this view, the function of higher education is to serve as a series of screens (or as signals) telling employers which people are the most able. College provides information to the employers.*** Some people are screened out at the beginning --- they do not get into a college. Others are screened in a later stage --- they don't graduate from college, or they graduate from a college considered less prestigious (that is, easier to gain entrance), or they graduate with a lower GPA. Those that make it through all of the screens are able to obtain the best jobs. Those who make it through most screens obtain the next best jobs. And so on. In California, this phenomenon is built into the law. The University of California takes in the top 1/8 of the high school graduating class. The California State Universities and Colleges (CSU) takes in the top 1/3 of the high school graduating class. And the community colleges take in everyone. There is probably considerable truth in both views.

Studies reveal another interesting phenomenon. After college is completed, the increase in income does not happen immediately. For most people, the income earned after finishing college is less than could have been earned had one worked since the end of high school (see the graph on Page 5. This exists for a few years after graduating from college (in the graph, this phenomenon ends at age 28). Many recent college graduates are frustrated when they see this. The reason for it has to do in part with ***formal training by companies.*** The skills learned in this formal training are **general skills.** Since they can be easily transferred to other employers, companies require workers to “pay for” the acquisition of these skills. One “pays for” this training by accepting a lower wage than one could have received. For people starting a career, the starting pay often provides a misleading view of the quality of a job. ***Jobs with excellent training opportunities commonly have lower starting pay than those with poor training opportunities.*** One is often better off in the long-run by taking a job with lower starting pay but with better training opportunities.

Experience

Now let us shift to the **acquisition of specific skills --- those that cannot be transferred between employers.** One learns these through “**experience**”. This sometimes involves simple trial-and-error. It sometimes involves watching more experienced workers do a task. And it sometimes involves asking questions of other workers. Early in your career with a company, you may not be very productive. Yet, you are being paid by the company. ***The amount you are paid is greater than your marginal revenue product. In effect, the company is “investing” in you as a worker. The company is “paying for” your acquisition of specific skills.*** Of course, you are not paid to be unproductive; you are paid to learn. As you learn the specific job skills,

you become more productive. *At a later stage of your career with the company, the company will pay you less than your marginal revenue product.* How can they get away with this? The answer is that, while you are being paid less than you are contributing to the revenue of this company, you are paid more than you could contribute to the revenue of other companies. Your skills are specific to employment in this company. If you moved to another company, you would have to start over in acquiring specific job skills. *The difference between the amount the company pays you and your marginal revenue product is the company's return on its "investment" in you early in your career.*

The importance of specific skills in many jobs explains several phenomena. One is the common practice of *seniority rights*. If a company has to lay-off 5% of its workers, we know which ones will be laid-off? It will be the 5% of the workers who were the most recently hired. The senior people will also be paid more than the junior people, will have the longer vacations, and will be first to get perquisites, such as better parking spaces, better offices, and so forth. Imagine that there were no seniority rights. A new employee is hired. The person has good potential but, because the skills are specific to this company, does not have the experience yet. The new worker will try to gain the experience by watching the senior people or by asking them questions. If there were no seniority rights, the senior people would feel threatened. To protect themselves, they would not answer the questions (or would give false answers) and would not let the new workers watch. By granting seniority rights, the senior workers are not threatened by the new workers. They will answer all of the questions and allow the new workers to see their work. The company as a whole benefits because the new workers are able to learn the specific skills faster and become more productive. When one sees seniority rights in a company, one can guess that the development of specific job skills is important in that company.

Specific job skills also partially explain other phenomena. If specific skills are important to the productivity of workers in a company, *the company will desire workers who can learn these skills quickly and who will stay with the company for a long time.* Since companies are paying a new worker more than his or her marginal revenue product while the worker is learning, the companies want this period to be as short as possible. And since, after the worker has learned the specific skills, the company will pay the worker less than his or her marginal revenue product, the company wants this period to be as long as possible. But, unlike the assumptions of perfect competition, *information in labor markets is likely to be very poor. Companies are not able to know which workers will learn fastest and which workers will stay with the company for a long time.* Nor can they learn anything about these by asking the worker. Therefore, the companies practice *statistical discrimination. They treat the individual as typical of the group. To determine who might learn fastest, they might group people according to education,* as discussed earlier. How much education have you had? Which university did you attend? What were your grades? Based on these questions, they can categorize people. Those with the most years of school, who went to the most prestigious universities, and who had the highest grades are the most likely to be hired. *In terms of staying on the job, people can be grouped according to gender.* Men have tended to stay on jobs longer than women --- largely because women have tended to leave jobs when they have their children. Married men tend to stay on jobs longer than single men. *Where specific job skills are important, men are more likely to be hired because of the statistical discrimination.* As a result of this, a large proportion of women work in jobs where most of the skills are general skills: teaching, nursing, retailing,

and clerical jobs. One of the goals of *affirmative action* was to overcome this statistical discrimination. Companies were to develop goals for increasing the hiring of women and timetables by which the goals would be achieved. As companies hired more women, they would see that women do not leave jobs as often as had been thought. The statistics would change. Women would no longer be kept from jobs where specific job skills were important because of statistical discrimination.

We have explained the differences in people's wages as resulting from differences in the characteristics of the workers themselves. But sometimes wage differences result from certain characteristics of the jobs. *Workers who work in jobs that are very unpleasant (such as garbage collectors) tend to have higher wages.* Thus, higher wages are needed to induce people to become garbage collectors. *Workers who work in jobs that are very risky (such as those who build high rise buildings) also tend to have higher wages.* These are necessary in order to induce enough people to take the risks. On the other hand, **people may have non-pecuniary (non-monetary) benefits from a job.** For example, teachers have what would seem to be low wages considering the amount of education it takes to become a teacher. However, teachers have considerable periods of vacation, have job security, and have jobs that are usually considered pleasant to do. The vacations, the job security, and the pleasantness of the job have value to teachers, even though this value does not come in the form of money. Adding the value of these non-pecuniary benefits to the wages indicates that the true compensation of teachers is indeed in line with that of others who require the same amount of education.

In summary, our analysis has allowed us to focus on many possible reasons for the fact that women earn less than men and for the fact that the earnings gap between women and men has been narrowing. Our analysis tells us to consider the *prices* of the products produced by the workers. **We would hypothesize that these prices are higher for products produced by men but that the difference has been narrowing recently as industries have become more competitive.** Our analysis tells us to consider people's "*natural abilities*". For example, **it has been argued that women may have earned less than men because they are socialized to be less aggressive.** That type of socialization may be less common now. It has also been argued that women tend to earn less than men because they are typically shorter. Our analysis tells us to consider the amount of *capital per worker* that workers work with, as well as the technology of that capital. **Men may have earned more than women because they had access to more and better capital. With the growing use of computers, that advantage may be narrowing.** Our analysis tells us to consider the different *motivation* of men and women. Many people once argued that most women saw their main role as full-time mothers and were less motivated to pursue career advancement than men. Today, this may no longer be true. Our analysis also tells us to consider *skill development*. **Women may earn less than men because they had less education or different types of education.** (For example, even today, women are much less likely than men to be engineers.) **Women may have had less access to company training programs. And women may have not had access to jobs that provided considerable specific training because of the company's belief that they would leave employment (statistical discrimination).** All of this may be changing today. Finally, our analysis tells us to consider the *differences in the types of jobs* done by men and women. Jobs typically held by women may be more pleasant and less risky than some jobs typically held by men.

In examining all of these points, we can learn much about why men have earned more than

women and why the earnings gap has been narrowing. But we cannot learn all we need to know. There are surely other aspects to the explanation. One of these, discrimination, will be considered in the next chapter.

Test Your Understanding

This chapter has focused on the earnings gap between men and women. It is also true that, on average, white workers earn more than African-American or Hispanic workers. Use the points made in this chapter to explain why this might be so.

Practice Quiz on Chapter 23

1. Skills that **cannot** be transferred to other employers are called:
 - a. general skills
 - b. non-pecuniary wages
 - c. specific skills
 - d. all of the above
2. College education best provides
 - a. general skills
 - b. specific skills
 - c. experience
3. On the job experience best provides
 - a. general skills
 - b. specific skills
4. If worker A earns more in wages than worker B, it could be because:
 - a. The product made by worker A sells for a higher price than that made by worker B
 - b. Worker A uses more capital per worker than worker B
 - c. Worker A has more specific job skills than worker B
 - d. All of the above
5. The skills that are embodied in a person are called
 - a. statistical discrimination
 - b. human capital
 - c. screening
 - d. marginal physical product
6. **Statistical discrimination** is defined as:
 - a. paying different workers different wages for the same work
 - b. paying different workers different wages for comparable work
 - c. refusing to hire someone because of their ethnic background
 - d. treating an individual as typical of a group
7. On jobs with specific skills, at the beginning of one's career with a company,
 - a. the marginal revenue product is less than the wage
 - b. the marginal revenue product is greater than the wage
 - c. the marginal revenue product equals the wage

Answers: 1. C 2. A 3. B 4. D 5. B 6. D 7. A