The preferences of the worker are represented by the indifference curve $U_i$. The optimum retirement age occurs at point $d$ where the highest indifference curve consistent with the constraint is attained.

The chapter concludes by returning to the basic model of the choice between household and market work, where household work includes time spent in child rearing. The model is used to analyze a proposal for a child support assurance program. Under this proposal, a single parent eligible for child support would receive the child support payments from the government in the event that the absent parent does not make the payment. The proposal is evaluated within the context of a welfare system that provides a certain guaranteed income level if the person does not work at all, and then reduces welfare benefits dollar for dollar with income earned. In contrast, the guaranteed level of child support is available regardless of how much the parent earns in the labor market, but if the parent chooses not to work, the child support payment is subtracted from the maximum welfare subsidy.

Child care subsidies that reduce the fixed cost of child care encourage work among those who would otherwise be out of the labor force but create an income effect that may reduce hours for those already working. Subsidies that reduce the hourly cost of child care are more likely to create work incentives for all workers, because substitution effects dominate in participation decisions and, generally, at low levels of income.

### Review Questions

Choose the letter that represents the **BEST** response.

#### The Theory of Household Production

1. The theory of household production assumes that the family derives utility (satisfaction) from
   a. income.
   b. time spent in home production.
   c. the wage rate.
   d. leisure, commodities (e.g., meals, a clean home, the growth of children) produced by the family, and goods purchased with family income.

2. In a graphical representation of the household production theory, an indifference curve represents
   a. all the combinations of household production time and market purchased goods and services that can produce a certain level of utility.
   b. all the combinations of household production time and market purchased goods and services that can produce a certain level of output.
   c. all the combinations of leisure time and work that can produce a certain level of utility.
   d. both a and b.

3. Which of the following is a true statement about the budget constraint in a household production model?
   a. For any given level of household production time, it shows the maximum amount of goods and services that the family can purchase in the market.
   b. The magnitude of its slope equals the level of nonlabor income.
   c. The height of the constraint equals the wage rate.
   d. All of the above.
4. Consider a household production model where only one member of the family works for pay and there is zero nonlabor income. Which of the following statements are true if the working member receives a wage increase?
   a. The working member will experience an income effect that will drive him or her to spend less time in home production activities.
   b. The working member will experience a substitution effect that will drive him or her to spend more time in home production activities.
   c. The overall effect of a wage increase on labor supplied to the market cannot be determined from theory alone.
   d. All of the above.

5. The household production model reminds us that individuals really have three ways to allocate time: market work, household production, and leisure time. In such a context, an increase in the wage leads to
   a. a substitution effect where household work is cut back.
   b. a substitution effect where leisure time is cut back.
   c. income effects that lead to more household work and more leisure time.
   d. all of the above.

6. Data from time-use diaries show that for men, household production time increased, market work decreased, and leisure time increased between the years 1965 and 1981. Assuming the real wages of men were rising over this time, one can infer that
   a. the substitution effect between household and market work dominated the income effect.
   b. the substitution effect between leisure and market work dominated the income effect.
   c. the income effect dominated the substitution effects occurring between household and market work and leisure and market work.
   d. both a and b.

7. Data from time-use diaries show that for women, household production time decreased, market work increased, and leisure time decreased between the years 1965 and 1981. Assuming the real wages of women were rising over this time, one can infer that
   a. the substitution effect between household and market work dominated the income effect.
   b. the substitution effect dominated the income effect between leisure and market work.
   c. the substitution effect between household and market work was so strong that it counteracted the substitution effect between leisure and market work.
   d. both a and b.

8. The substitution effect of a wage change tends to be larger in the household production model than in the labor/leisure choice model because
   a. some types of purchased goods and services can easily make up for lost household production time.
   b. purchased goods and leisure time are likely to be used in a complementary fashion.
   c. household production time and market work can be thought of as perfect substitutes for some workers, particularly women.
   d. both a and b.
Joint Husband-Wife Labor Supply Decisions

9. According to the household production model, if a married couple decides to have one spouse stay at home, it should be
   a. the spouse who earns less in the labor market.
   b. the spouse who is more productive at home.
   c. the spouse for whom the difference between the wage and the household marginal productivity is lowest.
   d. both a and b.

10. According to the household production model, when a household decides that both spouses can work for pay, a wife should continue to supply extra hours to the market provided
    a. the husband is a substitute in household production.
    b. the husband and wife are complementary in the consumption of household commodities.
    c. the wage rate of the wife is higher than that of the husband.
    d. the extra hours spent working allow the wife to purchase goods and services that can at least make up for the time lost in household production.

11. In a household production model where both spouses work, if the wife increases her work hours, the husband will tend to work less if
    a. he and his wife are complements in household production.
    b. he and his wife are complementary in the consumption of household commodities.
    c. his marginal productivity in household production increases.
    d. both b and c.

12. When a husband’s time in the labor market becomes less valuable because of a health problem, the wife is more likely to increase her time in the labor market if
    a. his health problems do not impact his marginal productivity in household production.
    b. the husband and wife are substitutes in household production.
    c. the husband and wife are complementary in the consumption of household commodities.
    d. both a and b.

13. The “discouraged worker” effect occurs when an unemployed household member drops out of the labor force during a recession. This occurs because
    a. other members of the household may be joining the labor force due to the “added worker effect.”
    b. the expected wage of unemployed workers tends to fall during a recession.
    c. changes in the expected wage create a substitution effect by lowering the opportunity cost of time at home.
    d. both b and c.

14. Consider a household where currently only the husband works for pay. If the family becomes eligible for an income maintenance program that increases family income and reduces the effective wage, the household production model predicts that
    a. the husband will supply less labor to the market.
    b. the wife may begin to work for pay.
    c. more total hours will be supplied to household production.
    d. all of the above.
Life-Cycle Aspects of Labor Supply

15. A recent empirical study found that the labor force participation rates of married women tend to rise over time, with the largest increases being after age thirty. One explanation for this is that
   a. wages tend to rise as a person ages.
   b. marginal household productivity tends to fall as children get older.
   c. men have increasingly been spending more time in household production and less time working for pay.
   d. the invention of new time-saving devices (e.g., microwave ovens) makes work at home less necessary.

16. If workers are aware of the general path that their wage will take over their lifetime, what will happen when an anticipated increase in the wage occurs?
   a. there will be no change in the quantity of labor supplied.
   b. the quantity of labor supplied will decrease.
   c. there will be a substitution effect but no income effect.
   d. both b and c.

17. Under the Social Security program, yearly pension benefits rise as the retirement age is delayed. However, at some point the increase is not enough to offset the reduced number of years the benefits will be received. The result is that lifetime benefits eventually fall as the retirement age is delayed. Suppose this payment structure were replaced by one where lifetime benefits remained constant as the retirement age increased. How would this affect the decision about retirement age?
   a. the retirement age would tend to increase.
   b. the retirement age would tend to decrease.
   c. the retirement age would increase only if the income effect of the change dominated the substitution effect.
   d. the retirement age would decrease only if the income effect of the change dominated the substitution effect.

Problems

The Theory of Household Production

18. Consider two families that derive satisfaction (utility) from the consumption of market goods and household goods (including leisure). Of course, there is no requirement that all families see the tradeoff between goods and household time the same way. In Figure 7-2, suppose that curve $U_1$ represents the combinations of goods and time that yield a certain level of utility for family 1, while curve $U_2$ represents the combinations of goods and time that yield the same level of utility for family 2.

![Figure 7-2](image-url)
18a. Describe the differences in how each family views the tradeoff between goods and household production time.

18b. Suppose that each family has no nonlabor income and that only one member works for pay at an initial wage of $2. This leads to the initial budget line \( ab \). Given the tradeoffs perceived by each family, the initial point chosen by each is point \( c \). Now suppose the market wage facing the working member of each family increases to $4. Will the substitution effect of the wage increase be greater for family 1 or family 2? Show the substitution effects for each family graphically.

**Joint Husband-Wife Labor Supply Decisions**

19. According to the text, “The basic premise of the household production model is that people are productive in two places: in the home and in a ‘market’ job. Their decisions about whether to seek market work and for how many hours are a function of their relative productivities in both places. As long as an extra hour of market work allows the person to buy more goods than are required to make up for the hour of lost production time at home, the person will work for pay that extra hour.”

Consider a family that ranks combinations of household production time \( (N) \) and purchased goods and services \( (Y) \) according to the formula

\[ U = NY, \]

where \( U \) represents the level of utility (associated with the production of some household commodity). Suppose the maximum time available in a day is 16 hours and currently a spouse devotes 4 hours to market work \( (H) \) at a wage of $10 per hour.

19a. What is the level of utility associated with the spouse’s current choice?

19b. How much additional purchasing power would the spouse contribute if the number of hours worked in the market rose to 8?

19c. How much of an increase in purchased goods and services would be necessary to compensate for the additional 4 hours of lost household production?

19d. Is the additional 4 hours of market work a good deal for this family?

19e. If this couple is raising a child, suppose that combinations of household production and purchased goods are now ranked according to the formula

\[ U = N^2Y. \]

Would the additional 4 hours of market work be a good move for the family in this situation?

19f. Returning to the situation where the family ranks combinations of household production time and purchased goods according to the formula \( U = NY \), suppose the spouse has already made the move to working 8 hours per day. Would one additional hour of market work make the family better off or worse off?
19g. Technological advancements like microwave ovens, disposable diapers, and video cassette players have transformed the tradeoff between household production time and purchased goods. For a small increase in purchased goods, households can now obtain a large decrease in household production time without reducing the quantity of the final commodities that are produced. The change in the tradeoff can be represented by giving purchased goods more weight in the household’s ranking formula.

Suppose that technological advancements result in the ranking formula becoming

$$ U = NY^2. $$

Under these conditions, would a family where the spouse already works 8 hours per day benefit from having him or her work an additional hour?

20. Consider a household where the husband can earn a market wage of $15 per hour and has a marginal productivity in the household that is the equivalent of $12. The wife can earn a market wage of $20 and has a marginal productivity in the household that is the equivalent of $15. Suppose initially that their marginal household productivities do not depend on the time that the other spouse spends at home.

20a. If the couple decides to have only one of them work for pay outside the home, who should it be?

20b. Would it make sense for both the husband and wife to work for pay outside of the home?

20c. Assuming both members of the couple are working, how would an increase in the wife’s wage affect her work hours? Would an increase in the wife’s wage cause the husband to increase or decrease his work hours?

20d. How would your answer to 20c be different if you knew that the couple were substitutes in household production?

20e. How would your answer to 20c be different if you knew that the couple were complementary in household consumption?

The Discouraged Worker Effect

*21. Consider a family that ranks the combination of household production time \( N \) and purchased goods \( Y \) according to the formula

$$ U = NY, $$

where \( U \) represents the level of utility (associated with the production of some household commodity). Suppose the maximum time available in a day is 16 hours and currently a spouse devotes 7 hours to market work \( (H) \) at a wage of $5 per hour. Suppose the family also receives $10 per day in nonlabor income (e.g., food stamps).

21a. What is the level of utility associated with the current mix of market work and household production?

21b. Assume that a recession occurs and the worker is laid off from his or her job. What is the level of utility at the new mix of market work and household production?
*21c. Suppose the probability of finding a comparable job during this recession is \( \pi \). What is the return to taking an hour away from household production activities to look for a job?

*21d. Assuming \( \pi = 0.5 \), would an hour spent in the labor force searching for a job make this person better off or worse off? Would the worker continue to be a member of the labor force under these conditions? If not, how would he or she be categorized?

*21e. Assuming \( \pi = 0.1 \), would an hour spent in the labor force searching for a job make this person better off or worse off? Would the worker continue to be a member of the labor force under these conditions? If not, how would he or she be categorized?

*21f. Suppose that if the worker were willing to accept a job paying only $2 per hour, the probability of finding a job would rise to \( \pi = 1/3 \). Would the worker continue to be a member of the labor force under these conditions?

### Applications

**Changes in the Allocation of Time by Men and Women**

22. Data from time-use diaries suggest that as wages have risen, leisure consumption has increased for both men and women. At the same time, however, women have devoted more hours to market work and less to household production, while men have devoted less time to market work and slightly more time to household production. One key to explaining these differences is to realize that the substitution effect between market work and leisure is likely to be much smaller than the substitution effect between market work and household production.

Figure 7-3 represents a model of an individual’s choice between market work and leisure, while Figure 7-4 shows the choice between market work and household production. In each figure, the person has no nonlabor income and an initial wage of $3, leading to the initial budget line \( ab \). Preferences between purchased goods or income (\( Y \)) and non-market time are indicated by the curves labeled \( U_1 \). The initial point chosen is point \( c \) in Figure 7-3, and point \( a \) in Figure 7-4.