Chapter 3

Population, Participation Rates, and Hours of Work

After reading this chapter, you should be able to:

1. **Describe trends in the population and labor force.**
2. **Explain Becker's model of the allocation of time.**
3. **Compute the labor force participation rate.**
4. **Describe changes in labor force participation rates across demographic groups over the years and explain why these changes have occurred.**
5. **Describe how the "added-worker effect" and the "discouraged-worker effect" influence labor force participation rates over the business cycle.**
6. **Cite the reasons for the workweek decline in the early twentieth century and the relative stability of the workweek since World War II.**

"The times they are a changin'."[1] The 1946–1964 baby boom that added about 76 million people to the labor force gave way to a "baby bust" that will mean much smaller increases in the labor force in the immediate future. During the past decade, immigration added over 9 million people to the U.S. population. Disadvantaged groups such as African-Americans and Hispanics constitute a growing percentage of our labor force. Dual-worker families were 9 percent of all families in 1940; today they are 35 percent.

The hustle and bustle of our lives have greatly increased as we juggle education, market work, household activities, and leisure. Divorces are much more common than in earlier periods. The percentage of families with children maintained by single mothers has more than doubled from 12 percent in 1970 to 27 percent today. Since 1950 women

[1] Bob Dylan lyrics.

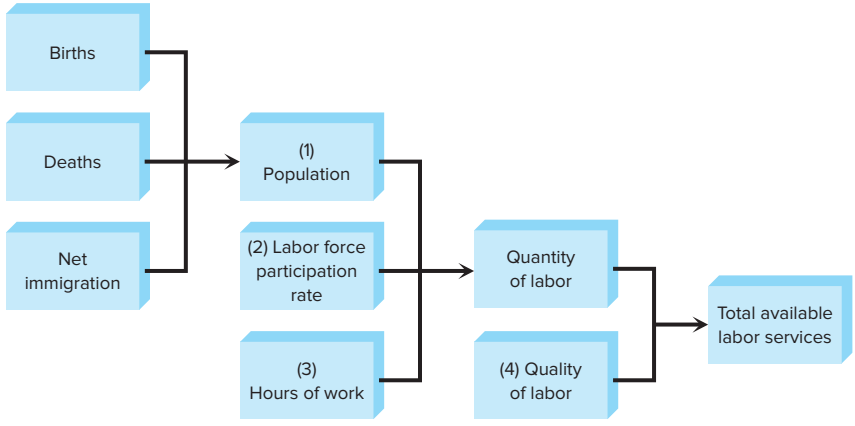

FIGURE 3.1
Determinants of the Total Labor Services Available
The total amount of labor services available in an economy depends on the population size, the labor force participation rate, the length of the workweek and workyear, and the quality of the labor force.

have increasingly participated in the labor force; meanwhile the participation rates of older working-age men have declined. The workweek decreased by 20 percent during the first half of the 20th century, but since then it has remained relatively constant.

These facts all relate to the supply of labor, examined more broadly here than in the previous chapter. For the economy as a whole, the concept of labor supply has many dimensions. As Figure 3.1 indicates, the aggregate of labor services available to a society depends on (1) the size and demographic composition of the population, which in turn depend on births, deaths, and net immigration; (2) the labor force participation rate—that is, the percentage of the working-age population that is actually working or seeking work; (3) the number of hours worked per week or year; and (4) the quality of the labor force. In this chapter, we consider the first three of these aspects of labor supply: population, participation rates, and hours of work. Labor quality will be analyzed in Chapter 4.

THE POPULATION BASE

As a broad generalization, the size of a nation's labor force depends on the size of its population and the fraction of its population participating in the labor market. Figure 3.2 portrays the growth of the U.S. population and labor force over the 1950–2014 period. Recalling Figure 3.1, we know that population grows partly as a result of natural increases—that is, the excess of births over deaths—and net immigration. Because death rates are less variable (declining slowly over time), most of the variations in U.S. population growth have resulted from changes in birthrates and net immigration. For example, the 1946–1964 baby boom added almost 76 million people to the U.S. population who, some 20 years later, entered the labor force in extraordinarily large numbers. Birthrates declined sharply following the baby boom, and this decline has resulted in slightly lower growth of the population in recent years. But the U.S. population continues to expand. Immigration (considered in detail in Chapter 9) has also fluctuated over time, largely as a consequence of

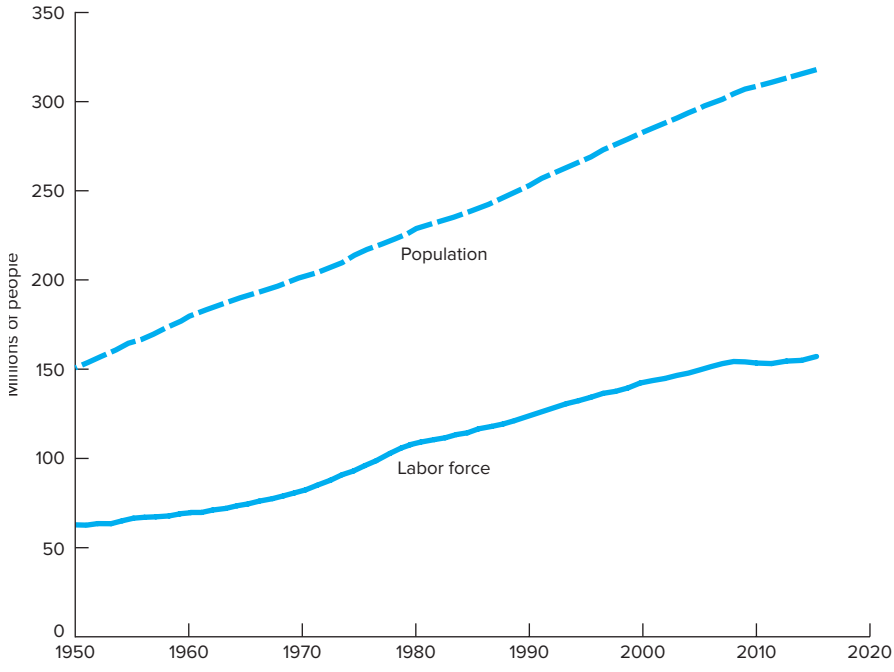

FIGURE 3.2
Population and Labor Force Growth
Population and the labor force have both grown significantly in the United States, but rates of growth have varied from one period to another.

changes in U.S. immigration policies. In some recent years, immigration has accounted for as much as 20–25 percent of population growth.

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With this backdrop of population growth in mind, let's now turn to an economic theory that sheds light on participation rates.

BECKER'S MODEL: THE ALLOCATION OF TIME

In Chapter 2 we introduced a model in which an *individual* was making a choice between labor market work and leisure. While this model proved useful in generating an understanding of the work–leisure decision and a number of its implications, the model has been generalized and expanded by Becker (World of Work 1.1) and others.[2] This generalized ***model of the allocation of time*** is particularly useful in understanding the main topic at hand: labor force participation.

Two Fundamental Changes

The basic work–leisure choice model can be extended in two fundamental ways.

1 Household Perspective

The first change is that it is frequently more informative to think of the household as the basic decision-making unit rather than the individual. Most people are members

[2] The landmark article is Gary Becker, "A Theory of the Allocation of Time," *Economic Journal,* September 1965, pp. 493–517.

3.1 World of Work

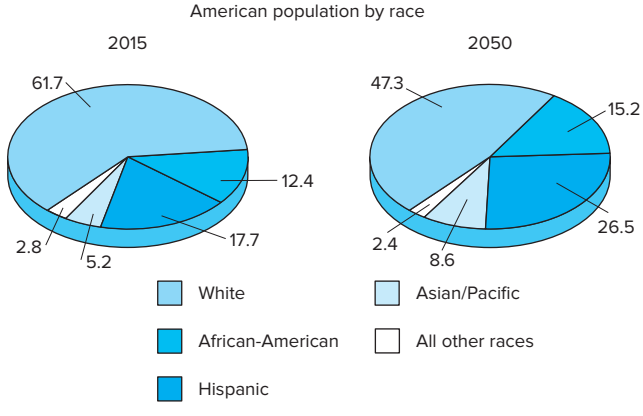
The Changing Face of America

In 2014 the Census Bureau issued a revised population forecast that suggests smaller long-term growth of the U.S. population than did earlier estimates. The report also predicts even more diversity in the population than was projected earlier. By 2050 the U.S. population is expected to rise to 398 million from 321 million in 2015. This new projection for 2050 is down 22 million from earlier projections.

How will the composition of the population be different in 2050 compared to 2015? As shown in the accompanying pie charts, the population in 2050 is expected to be much more diverse. Asians, Hispanics, African-Americans, and other nonwhite groups will comprise over half of the population in 2050.

The population growth will slow in the next several decades due to two main factors. First, the Census Bureau now estimates that 1,364,000 immigrants will arrive each year, down from earlier estimates of 1,712,000. Second, the number of births is expected to slow from 5,001,000 per year to 4,218,000 per year due to a decline in the nation's fertility rate.

If the Census Bureau's predictions are accurate, they have several important implications for the labor force. First, the projected slowdown in labor force growth raises the potential for labor shortages. Second, the lower immigration and smaller fertility rates will accelerate the present aging of the American population. This means, for example, that the ratio of receivers of Social Security benefits to the number of people paying into the system will rise faster than once expected. Third, a renewed emphasis on education and training will be necessary to prepare the growing number of racially diverse youth for high-quality jobs. Finally, workplaces will be transformed, with owners, managers, and workers increasingly being nonwhite. Greater tolerance for racial and ethnic differences will be an absolute necessity if the United States is to retain its high labor productivity and standard of living.



Source: U.S. Census Bureau.

Sources: U.S. Census Bureau, *U.S. Population Projections: 2014–2060,* December 2014.

of households, and decisions about how they spend their time are strongly influenced by the decisions of other household members. Decision making is interrelated; for example, a wife's decision about whether she should seek labor market work may depend on whether her husband is currently employed, and vice versa.

2 Multiple Uses of Time

In Becker's model of household allocation of time, the traditional work–leisure dichotomy is replaced by a more complex categorization of the uses of time. As Becker sees it, a household should be regarded as an economic unit that is *producing* utility-yielding "commodities." These utility-yielding *commodities* are produced by the household by combining *goods* (goods and services) with *time*. More generally, a household can use the time available to it in at least three basic ways. Time can be (1) sold in the labor market to obtain the monetary income required to purchase goods and services (labor market time), (2) used in household production (household production time), and (3) used in actual consumption of goods and services (consumption time).

Thus, for the typical household, the commodity we call a *meal* is produced by combining certain goods acquired through the provision of labor market time (food bought at the supermarket) with household production time (the time it takes to prepare these goods as a meal) and consumption time (the time it takes to eat the meal). Because the total amount of time available to the household is limited, the alternative uses of time compete with one another. For example, other things being equal, a family in which both spouses engage in labor market work will have less time available for household production and consumption than a family with one nonworking spouse.

Commodity Characteristics

Commodities have two characteristics of considerable significance for any discussion of how a household might allocate its time in general and how it might make labor market participation decisions in particular. First, some commodities are relatively time-intensive, whereas others are relatively goods-intensive. ***Time-intensive commodities*** are composed of a large amount of time and a small amount of goods. Examples include such "pure" leisure activities as watching the sunset at the beach or dozing in a hammock.[3] ***Goods-intensive commodities*** require large amounts of goods and little time, such as a meal at a fast-food restaurant. One implication of this distinction is that as time becomes more valuable in the labor market (if wage rates increase), a household may sacrifice time-intensive commodities in favor of goods-intensive commodities to devote more time to labor market work.

The second characteristic of commodities is that, within limits, time and goods are usually substitutable in producing them. Thus, a specific commodity can be produced by the household with much time and a small amount of goods or vice versa. At one extreme, a household can produce a meal with home-grown, home-prepared food. At the other extreme, it can purchase a meal at a restaurant. The former is a highly time-intensive commodity; the latter is a goods-intensive commodity.

[3] In the Becker model we can think of leisure as the pleasurable consumption of time per se wherein the amount of goods required is zero.

Household Choices

In the Becker model, the household has a number of questions to answer as it seeks to maximize its utility. First, what commodities does it want to consume? Second, how does it want to produce these commodities? That is, to what extent should commodities be provided through labor market work as opposed to production in the home? Third, how should individual family members allocate their time among labor market work, home production, consumption, and other possible uses?

The third question is most relevant for the topic at hand.[4] The general principle employed in deciding how each household member should allocate his or her time is that of comparative advantage. The principle of comparative advantage says that an individual should specialize in the productive endeavor that can be performed with the greatest relative efficiency, or in other words, with the least opportunity cost. In apportioning its available time, a household should compare the productivity for each family member in all of the various market and nonmarket activities needing to be performed in producing commodities. The basic rule is that the more productive or proficient one is in a certain activity as compared to other family members, the greater the amount of one's time that should be devoted to that activity. Because family members normally have different characteristics with respect to age, sex, educational attainment, and previous labor market and nonlabor market experience, at any point in time they will differ substantially in the relative efficiency of producing commodities (utility) from market and nonmarket activities. Obviously the wife has a biologically determined comparative advantage in childbearing. Also, through socialization (role definition by society) or because of preferences, or both, many females develop a comparative advantage in other aspects of household production, such as homemaking activities like cleaning, food preparation, and caring for children. Furthermore, we will find evidence in Chapter 14 suggesting that women are often discriminated against in the labor market. Because of such discrimination and assuming that other things (such as education, job training, and labor market experience) are equal, many husbands can obtain more income and therefore more goods for the household from a given amount of labor market work than their wives can. Historically, for many households, the principle of comparative advantage led husbands to devote much of their time to labor

[4] The second question will be treated in the ensuing discussion of the participation rates of the various subaggregates of the population. With regard to the first question, we will assume that the household's preferences for commodities are given, noting that in Becker's model the theory of consumer behavior must be modified to account for the economic value of time. More precisely, a household will be purchasing the utility-maximizing combination of goods ($a, b, \ldots, n$) when the marginal utility of the last dollar spent on each is the same. Algebraically stated, utility is maximized when $\mathrm{MU}a/Pa = \mathrm{MU}b/Pb = \cdots = \mathrm{MU}n/Pn$, where MU is marginal utility and P is product price. Becker contends that the appropriate prices to be used are *not* simply the market prices of each good but rather the "full price": the market price of a good *plus* the market value of the time used in its consumption. Thus if good a is a two-hour concert whose price is \$8 and your time is worth \$10 per hour in the labor market, then the full price of the concert is $\$28 = \$8 + (2 \times \$10)$. Taking the value of time into account, the full prices of highly time-intensive goods will rise relatively and those of less time-intensive goods will fall relatively, generating a different utility-maximizing combination of goods than if only market prices were used.

market work while their wives engaged in nonmarket work within the home. Similarly, we will find in Chapter 4 that children have a comparative advantage in acquiring education. Education is an investment in human capital, and other things being equal, the rate of return on that investment varies directly with the length of time a person will be in the labor market after his or her education is completed.[5]

Income and Substitution Effects Revisited

It is helpful in understanding Becker's model to reexamine the income and substitution effects within its more general framework.

Becker Income Effect

Assume there is an increase in wage rates. The *income effect* indicates that the household now realizes a larger income for any number of hours of labor market work, and therefore the consumption of most goods will increase.[6] But the consumption of additional goods requires more time. Remember that goods must be combined with time to produce utility-yielding commodities; therefore, with consumption time increasing, hours of work will tend to fall. Although the rationale is different, the income effect reduces hours of work as it did in the simpler model of Chapter 2.

Becker Substitution Effect

There is also a more complex *substitution effect*. A higher market wage rate means that time is more valuable not only in the labor market but also in both the production and consumption activities occurring within the household. On one hand, the household will substitute goods for time in the *production* of commodities as the wage rate rises. This implies that the household will produce commodities in less time-intensive ways. For example, the family may patronize fast-food restaurants with greater frequency and therefore spend less time preparing meals within the home. On the other hand, with respect to *consumption,* the household will alter the mix of commodities it consumes, shifting from time-intensive to goods-intensive commodities as wage rates increase. Such time-intensive activities as vacations and playing golf may give way to the purchase of a work of art or racquetball. Or alternatively, a week's skiing in Colorado can be made less time-intensive for a Chicagoan by flying to the resort rather than driving. These adjustments in both the production and consumption of commodities release time for paid work in the labor market, therefore, as in our simpler model, this more complex substitution effect increases hours of work when wage rates rise.

As in our simpler model, the net impact of the income and substitution effects on the hours of labor market work could be either positive or negative, depending on their relative magnitudes. But the alleged superiority of Becker's model is that it embodies a more comprehensive and more realistic portrayal of the uses of time. People do not merely divide their time between the assembly line and the hammock, as a narrow interpretation of Chapter 2's simpler model might imply. As

[5] For an interesting discussion of the *disadvantages* of intrahousehold specialization, see Francine D. Blau, Marianne A. Ferber, and Anne E. Winkler, *The Economics of Women, Men, and Work,* 7th ed. (Englewood Cliffs, NJ: Prentice-Hall, 2014), chapter 3.

[6] The exception, of course, is *inferior goods,* for which purchases decline as incomes increase.

noted earlier, the Becker model is a useful tool for understanding labor force participation rates, the topic to which we now turn.

3.1 *Quick Review*

- The population base underlying the total supply of labor depends on the birthrate, the death rate, and the rate of net immigration.
- The Becker model of the allocation of time regards households as economic units deciding how best to allocate their time among work, household production, and household consumption to obtain utility-yielding commodities.
- In the Becker income effect, a rise in the wage rate raises income, allowing the household to buy more goods; hours of work fall because these goods require more time to consume.
- In the Becker substitution effect, a rise in the wage rate increases hours of work because households substitute *(a)* goods for time in the production of commodities and *(b)* goods-intensive commodities for time-intensive commodities in consumption.

Your Turn

In general, women's educational levels and real wage rates have increased greatly over the past several decades. Also, women are increasingly participating in the workplace. What do these facts imply about the relative strengths of the Becker income and substitution effects? (*Answer:* See page 598.)

PARTICIPATION RATES: DEFINED AND MEASURED

The labor force participation rate is determined by comparing the actual labor force with the potential labor force or what is sometimes called the "age-eligible population."

In the United States, we consider the ***potential labor force*** or age-eligible population to be the entire population *less* (1) young people under 16 years of age and (2) people who are institutionalized. Children under 16 are excluded on the assumption that schooling and child labor laws keep most of them out of the labor force.[7] Furthermore, the segment of the population that is institutionalized—in penal or mental institutions, nursing homes, and so on—is also not available for labor market activities.[8] The ***actual labor force*** consists of those people who are either (1) employed or (2) unemployed but actively seeking a job.[9] Thus, in percentage form we can say that the ***labor force participation rate*** (LFPR) is

$$\text{LFPR} = \frac{\text{actual labor force}}{\text{potential labor force}} \times 100 \qquad \textbf{(3.1)}$$

[7] Although excluded from the official definition of the labor force, many people under 16 years of age do engage in labor market activities.

[8] Since 1983, all armed forces personnel stationed in the United States have been considered to be members of the labor force, the rationale being that joining the military is a voluntary decision and therefore represents a viable labor market alternative. Prior to 1983, members of the military were not counted as part of the labor force. The Bureau of Labor Statistics now reports data for both the total labor force and the civilian labor force.

[9] More precise definitions will be introduced in Chapter 18. Note that all part-time workers are included in the labor force.

or

$$\text{LFPR} = \frac{\begin{array}{c}\text{noninstitutionalized population} \\ \text{16 years of age or over in the labor force}\end{array}}{\text{noninstitutionalized population}} \times 100 \quad \textbf{(3.2)}$$

In August 2015, for example, the LFPR was

$$\frac{157{,}065{,}000}{251{,}096{,}000} \times 100 = 62.6\%$$

Participation rates can be similarly determined for various subaggregates of the population, such as married women, African-American teenage females, and so forth.

SECULAR TREND OF PARTICIPATION RATES

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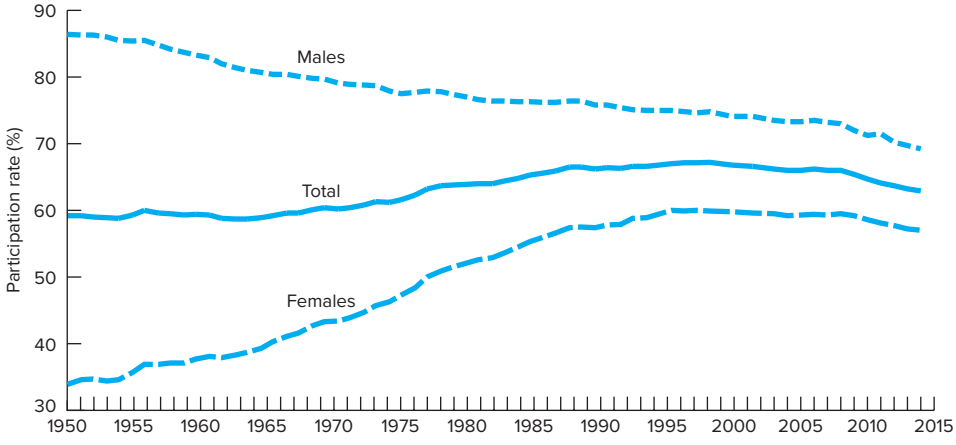
Let's now turn to the long-run or secular trend of participation rates in the United States as portrayed in Figure 3.3. You should be forewarned that the factors affecting participation rates are varied and complex; some are economic variables, while others are of an institutional, legal, or attitudinal nature. Thus, although the Becker model is useful in explaining many important changes in participation rates, it cannot be realistically expected to provide a complete understanding of all the forces at work.

FIGURE 3.3 Total, Male, and Female Participation Rates
The total or aggregate participation rate has slowly drifted upward over time. This is the net consequence of the rapidly rising female participation rate more than compensating for a declining male rate.



3.2 World of Work

More College Students Are Employed*

College students are much more likely to work and work more hours now than in the past. This change has been most pronounced among full-time students aged 18 to 22 who are enrolled in two- or four-year colleges. Between 1970 and 2000, the labor supply of these students increased from 6 hours to 11 hours per week. In 2000, just over half of students worked and the average student worked 22 hours per week. After the 2000, the labor supply stopped increasing and in 2009 it dropped sharply to 8 hours per week.

Judith Scott-Clayton suggests three possible explanations for these changes. First, tuition levels have risen significantly over the past 40 years. Students may be credit constrained and thus work to pay the higher tuition bills. Second, there may be shifts in the composition of college students toward those who are more likely to work while attending college. Third, economic conditions will likely affect the likelihood college students are employed. For example, if the unemployment rate is higher, then college students will be less likely to work.

She finds that the factors behind the shifts in the labor supply of college students have changed over time. Between 1970 and 1982, only about one-fifth of the rise in hours of work was due to changes in the composition of students towards those more likely to work. Changes in tuition costs and economic conditions appear to explain none of the rise in labor supply. The expansion of the Federal Work-Study program during this time period, however, does appear to explain a large portion of the increase in labor supply. Between 1982 and 1993, compositional changes and economic fluctuations can fully explain the rise in the labor supply of college students.

Since 1993 credit constraints appear to play a more central role. Compositional and economic fluctuations explain only 40 percent of the rise between 1993 and 2005 and 60 percent of the decline since 2005. Tuition rose sharply and student aid fell in real terms between 1993 and 2005, which helps explain the rise in labor supply during that period. Since 2005, real tuition has fallen after adjusting for student aid, which is consistent with the observed decline in employment rates.

The large decline in labor supply in 2009 appears to have been caused by the poor economic conditions during that year. Thus, college students are likely to increase their hours of work as the unemployment rate drops. Credit constraints were a significant factor in explaining recent changes in employment rates. As a result, whether student aid continues to rise at a faster rate than tuition will likely play an important role in the labor supply of college students in the future.

* Based on Judith Scott-Clayton, "What Explains Trends in Labor Supply Among U.S. Undergraduates *National Tax Journal,* March 2012, pp. 181–210.

Figure 3.3 reveals that the aggregate participation rate has gradually drifted upward since World War II. In 1950, about 60 percent of the age-eligible population were labor force participants. By 2014, that figure had increased to about 63 percent, with most of the rise occurring in the 1970s and 1980s. In Figure 3.3, we also observe that the participation rate of males has declined steadily. Specifically, male participation rates declined from about 86 percent in 1950 to approximately 69 percent in 2014. Until recently, concomitant increases in female participation rates have more than offset this decline. Female participation rates rose from about 34 percent in 1950 to about 57 percent in 2014. In short, male and female participation rates are

3.3 World of Work

Why Has the Labor Force Participation Rate Fallen?*

An important question for U.S. economic policy makers is the reason behind the fall in the labor force participation rate from 66 percent in 2007 to 63 percent at the end of 2014. The aging of the population and the retirement of the baby boom generation certainly contributed to the fall in participation. However, the Great Recession of 2007–2009 also likely played a role by causing individuals to drop out of the labor force due to their diminished job prospects. If most of the decline in the participation rate is due to cyclical factors, then policymakers may want to take actions to tighten the labor market and thus encourage individuals to reenter the labor market. If the decline in participation is mostly due to structural factors such as population aging or higher school enrollment rates, then such countercyclical measures would not be so desirable.

Stephanie Aaronson and several other Federal Reserve researchers have examined the causes of the decline in the participation rate between 2007 and 2014. They conclude that cyclical factors can only account for ¼ to 1 percentage point of the 2.8 percentage points decline in the participation rate. The remaining portion of the fall in participation is due to structural reasons. Aging of the population can account for nearly half of the decline by itself. Another important factor is the decline in the participation rate for youths, which is likely due to increasing returns to education and greater competition for low-skill jobs.

The researchers predict that the labor force participation rate will continue to decline over the next decade. They forecast the labor force participation rate will fall by another 2¼ percentage points between 2014 and 2024. A large portion of the predicted decline is due to the retirement of baby boomers.

* Based on Stephanie Aaronson, Tomaz Cajner, Bruce Fallick, Felix Galbis-Reig, Christopher Smith, and William Wascher, "Labor Force Participation: Recent Developments and Future Prospects," *Fall 2014 Brookings Papers on Economic Activity*, forthcoming.

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tending to converge. It is important that we understand the major causal factors underlying these trends.

Rebounding Participation Rates of Older Males

Figure 3.4 shows male participation rates by age groups. The message here is that the participation rates of older males have changed markedly. We find a large reduction in the participation rates for males 65 and older between 1950 and the mid-1980s but have risen since then.[10] We also observe a sharp decline for males aged 55 to 64 between 1950 and the early 1990s, and a small rise since then.

A variety of factors have been cited to explain these changes. These include (1) rising real wages and earnings, (2) the changes in the availability of public and private pensions, (3) increasing access to disability benefits, (4) increasing education levels, and (5) rising labor force participation of older wives.

[10] Economic incentives don't fully explain the spike in retirement at age 65. See Robin L. Lumsdaine, James H. Stock, and David A. Wise, "Why Are Retirement Rates So High at Age 65?" in David A. Wise (ed.), *Advances in the Economics of Aging* (Chicago, IL: University of Chicago Press, 1996).

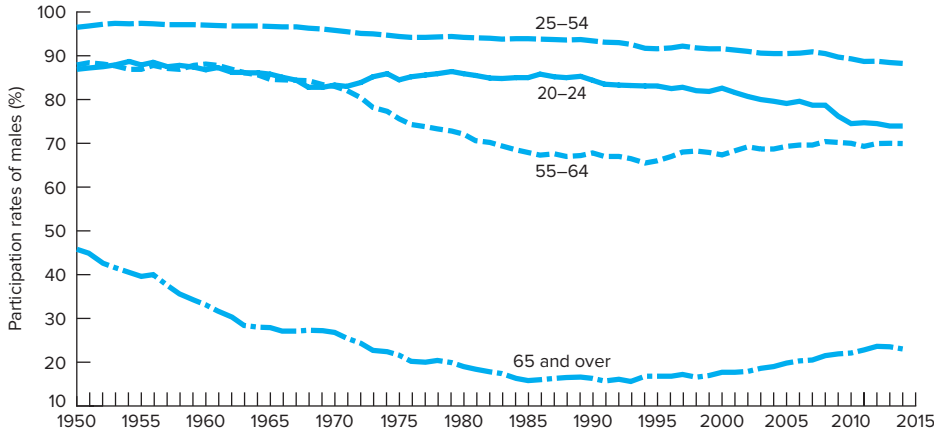


FIGURE 3.4
Male Participation Rates by Age Group
While the participation rates of males in the 20–24 and 25–54 age groups have remained quite constant, the rates for older males fell significantly and then have risen.

1 Rising Real Wages and Earnings

Economic growth has been accompanied by rising real wages and earnings. For example, real gross domestic product per capita has increased about threefold since 1950. We know that rising real wages entail both income and substitution effects. In the case of older men, the income effect has dominated the substitution effect and, consequently, many have chosen more leisure in the form of retirement. In many instances, the deteriorating health of older males may also have induced retirement by increasing their preferences for leisure or, in terms of Chapter 2, by making their indifference curves steeper.[11] Put in simpler language, as our society has become more affluent over time, the secular increase in real wages and earnings has allowed more workers to accumulate sufficient wealth to retire at an earlier age. The average age of final retirement has fallen by between five and seven years for both men and women since 1950.[12]

2 Social Security and Private Pensions

An additional factor in explaining the declining participation rates of older males is the availability of Social Security and private pensions. Established in 1935, the Social Security program now provides retirement benefits for older workers and their survivors in addition to income support in the case of disability or illness. Social Security retirement benefits have been characterized by both expanding coverage and increasingly generous levels, thereby providing an important source of nonlabor income that has induced large numbers of elderly male workers to withdraw from the labor force. In recent years, Social Security benefits have been rising faster than wages in real terms, which enhances the relative attractiveness of retirement.

[11] Health status played a more important role in the labor force participation decisions of older men early in the 20th century. See Dora L. Costa, "Health and Labor Force Participation of Older Men, 1900–1991," *Journal of Economic History,* March 1996, pp. 62–89.
[12] Murray Gendell, "Older Workers: Increasing Their Labor Force Participation and Hours of Work," *Monthly Labor Review,* January 2008, pp. 41–54.

Furthermore, retirement benefits prior to age 65 are subject to a substantial benefit reduction rate—that is, an implicit tax on earned income—which further enhances the incentive for older workers to withdraw from the labor force.[13] Thus, both the income *and* substitution effects associated with Social Security generate disincentives to work.

Although federal legislation prohibits mandatory retirement, the availability of private pensions has been an inducement to early retirement. In 1950 only 16 percent of the labor force was covered by private pension plans; by 2010, 43 percent of all workers were covered. Declining participation rates for the 55–64 age group undoubtedly reflect that many pension plans allow retirement with full or partial benefits on completion of a specified number of years—say, 20 or 30—of employment.

Research by Ippolito[14] suggests that approximately half of the decline in the participation rates of men aged 55 to 64 in the 1970–1986 period is attributable to two factors: (1) changes in the Social Security system that increased retirement benefits by about 50 percent and (2) the alteration of private pension rules that encouraged early retirement.

Blau and Goodstein, however, find that changes in Social Security rules that increased the retirement age and increased benefits for retiring past the normal retirement age account for one-quarter to one-half of the rise in the participation rate among males aged 55 to 69 between 1988–92 and 2001–2005.[15]

3 Disability Benefits

Evidence also suggests that the disability component of the Social Security program has become increasingly generous and is progressive in the sense that low-wage workers receive relatively larger benefits than high-wage workers. As a result, low-wage workers are more inclined to seek disability benefits as an alternative to labor market participation.[16] Because African-American workers are generally lower-income workers, this consideration may explain the larger decline in the participation rates of older African-American workers compared with older white workers.[17]

[13] Prior to 2000, the benefit reduction also applied to workers aged 65 to 69. For an analysis of the labor supply impact of this implicit tax, see Steven J. Haider and David S. Loughran, "The Effect of the Social Security Earnings Test on Male Labor Supply: New Evidence from Survey and Administrative Data," *Journal of Human Resources,* Winter 2008, pp. 57–87.

[14] Richard A. Ippolito, "Toward Explaining Earlier Retirement after 1970," *Industrial and Labor Relations Review,* July 1990, pp. 556–69. From a public policy perspective, however, it may be difficult to reverse the increase in early retirement by reducing Social Security benefits. See Alan B. Krueger and Jorn-Steffen Pischke, "The Effect of Social Security on Labor Supply: A Cohort Analysis of the Notch Generation," *Journal of Labor Economics,* October 1992, pp. 412–37.

[15] David M. Blau and Ryan M. Goodstein, "Can Social Security Explain Trends in Labor Force Participation of Older Men in the United States? *Journal of Human Resources,* Spring 2010, pp. 328–63.

[16] During the 1990s, the labor force participation rate of individuals receiving disability benefits would have been at most 20 percentage points higher had none received benefits. See Susan Chen and Wilbert van der Klaauw, "The Work Disincentive Effects of the Disability Insurance Program in the 1990s," *Journal of Econometrics,* February 2008, pp. 757–84.

[17] See Donald O. Parsons, "Racial Trends in Male Labor Force Participation," *American Economic Review,* December 1980, pp. 911–20.

4 Rising Educational Levels

Another factor that helps explain the recent rise in the labor force participation rates of older males is rising educational levels. More educated individuals have higher labor force participation rates because their wage rates are higher and they have far fewer physical demands on their than their less-educated counterparts. The proportion of older workers who are high school dropouts has been falling, while the proportion with a college degree has been rising Blau and Goodstein find that nearly one-fifth of the rise in the labor force participation of males aged 55 to 69 between 1988–1992 and 2001–2005 was due to increases in educational attainment over the period.[18]

5 Rising Labor Force Participation of Older Wives

Let's consider a fifth and final factor that may account for the recent rise in the participation rates of older males. Tammy Schirle has examined the role of wives in the recent participation rate rise among older married men.[19] She argues that the labor force participation decisions of older married women influence the participation rates of their husbands in two ways. On one hand, the greater family income that results from a working wife causes an income effect that reduces the chance that the husband will work. On the other hand, couples may prefer to spend their leisure time together, particularly at older ages. Husbands may not enjoy their leisure time as much if their wives are working, and thus they prefer to work. If the shared leisure effect dominates the income effect, we would expect that the rising participation rate of older married women will increase the participation rate of older married men. This is exactly what Schirle found. Examining data from 1994 to 2005, she saw that one-quarter of the rise in the U.S. participation rate of married men aged 55 to 64 was due to increases in the participation rate of their wives.

Rising Female Participation Rates

Figure 3.5 portrays the participation rates of females by age groups. The participation rates of all female age groups have increased over the 64 years shown, with a recent slowing. We observe particularly pronounced increases for the two younger age groups.

Most of the increase in female participation rates shown in Figure 3.5 has been accounted for by married women. For example, the total number of females in the labor force increased by approximately 55 million over the 1950–2014 period. Of this total increase, about two-thirds were married women. In one sense, this is a surprising phenomenon. From the perspective of a household, one might have expected that the participation rate of married women would have declined since World War II as a consequence of the generally rising real wage rates and incomes of married males. And indeed, cross-sectional (point-in-time) studies reveal that the

[18] Blau and Goodstein, op. cit. For evidence that rising education levels can account for one-third of the rise in participation of married males aged 55 to 64 between 1994 and 2005, see Tammy Schirle, "Why Have the Labor Force Participation Rates of Older Men Increased since the Mid-1990s?" *Journal of Labor Economics,* October 2008, pp. 549–94.

[19] Ibid.

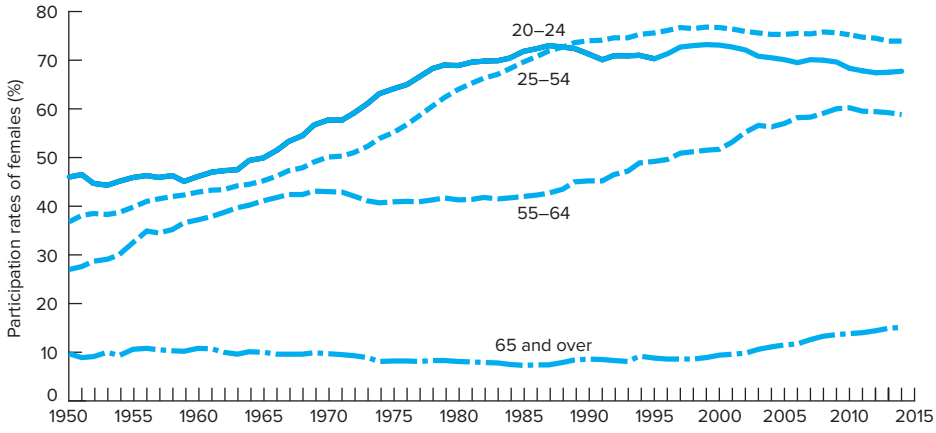


FIGURE 3.5
Female Participation Rates by Age Group
Aside from the 65 and older group, the participation rates of all women have risen over the past 61 years. The sharpest increases have been for younger women in the 20–24 and 25–54 age groups.

participation rates of married women do in fact vary inversely with their husbands' income. Our analysis in Chapter 2 suggests the reason: If leisure is a normal good, then a household will purchase more leisure as its income rises. Historically, this purchase of leisure was likely to be in the form of the wife's nonparticipation in the labor market. In terms of Figure 2.8, as the husband's income rises, an expanding intrahousehold transfer of income is available to the wife, and the consequent income effect induces her to be a nonparticipant. This line of reasoning suggests that wives in lower-income families are likely to work in the labor market because of economic necessity; but as the husband's income increases, more families will enjoy the luxury of having the wife produce commodities at home.

How can this reasoning be reconciled with the evidence that the participation rates of married women have actually increased over time? The answer lies partly in the fact that cross-sectional studies do not have a time dimension and therefore ignore or hold constant certain variables other than the husband's income that might have an impact on a wife's decision to participate in the labor force. That is, a number of factors besides husbands' rising incomes have been influencing the participation rates of married women over time. These other factors have so strongly influenced women to enter the labor market that they have overwhelmed the negative effect on labor market work of the generally rising incomes of husbands. Also, during the past two decades, the real income growth of many husbands has slowed or even ceased.

GP3.1

Economists have cited several possible reasons for the rapid rise in women's labor force participation.[20]

[20] See James P. Smith and Michael P. Ward, "Time Series Growth in the Female Labor Force," *Journal of Labor Economics, Supplement,* January 1985, pp. S59–90; Barbara Bergmann, *The Economic Emergence of Women* (New York: Basic Books, 1986), chaps. 2–3; Claudia Goldin, *Understanding the Gender Gap* (New York: Oxford University Press, 1990); and Francine D. Blau, "Trends in the Well-Being of American Women, 1970–1995," *Journal of Economic Literature,* March 1998, pp. 112–65.

3.1 Global Perspective

Labor Force Participation for Women Aged 25 to 54

Large variations exist in women's labor force participation rates across industrialized countries.

Source: Organization for Economic Cooperation and Development, *Employment Outlook,* July 2014, Table C.

1 Rising Real Wage Rates for Women

There has been a long-run increase in the real wage rates that women can earn in the labor market. This is primarily a consequence of women having acquired more skills through education. As already noted, higher wage rates generate both income and substitution effects within the framework of Becker's model. While the income effect reduces hours of work, the substitution effects related to both production- and consumption-related activities within the home tend to increase them. Goods will be substituted for time in the production of commodities *and* goods-intensive commodities will be substituted for time-intensive goods in the household's mix of consumer commodities. Both adjustments free the wife's time from household activities so that she may spend more time in the labor market. Presumably the substitution effect has dominated the income effect for many women, causing their participation rates to rise. The income effect for married women may be small because its size varies directly with the amount of time they are already devoting to labor market work. In the extreme, the income effect of a rise in wage rates is zero for a married woman who is not currently participating in labor market work. A wage rate increase increases a person's income only if the individual is currently providing hours of labor market work.

2 Changing Preferences and Attitudes

Rising female participation rates may also result from a fundamental change in female preferences in favor of labor market work. First, the feminist movement of the 1960s may have altered the career objectives of women toward labor market participation. Similarly, antidiscrimination legislation of the 1960s—which specifies equal pay for equal work and presumably has made "men's jobs" more accessible—also may have made labor market work more attractive compared to work in the home. Furthermore, aside from its positive impact on wage rates, greater education for women may have enhanced their tastes or preferences for labor market careers. More generally, society's attitudes about work have changed greatly. In the 1920s and 1930s, there was general disapproval of married women working outside the home. A man would lose status and be regarded as a "poor provider" if his wife was "forced" to take a job. But in the post–World War II period, an attitudinal turnabout emerged: Labor force participation by married women is now widely condoned and encouraged.

Reference to Figure 2.8 is helpful in distinguishing between how higher wage rates on the one hand and changing preferences on the other affect female participation rates. The availability of higher wage rates increases the slope of the budget line, which—given preferences—encourages labor market participation. Similarly, given the wage rates, a change in preferences favorable to market work makes the indifference curves flatter, which is also conducive to participation.

3 Rising Productivity in the Household

The use of more and technologically superior capital goods by businesses over time has been an important factor in increasing the productivity of work time and therefore in raising real wage rates. Larger amounts of improved machinery and equipment permit workers to produce a unit of output with less time. Similarly, the availability of more and better capital goods for household use has permitted households to reduce the amount of time needed to accomplish both production and consumption within the home. For example, supermarkets and the availability of home refrigerators and freezers greatly reduce the amount of time devoted to grocery shopping. The supermarket permits one-stop shopping, and refrigerators and freezers further reduce the number of shopping trips needed per week. Similarly, microwave ovens, vacuum cleaners, automatic clothes washers and dryers, and dishwashers have reduced the amount of time involved in food preparation and housework. Fast-food restaurants circumvent the time-intensive activity of food preparation in the home. By providing direct and convenient transportation, the automobile has reduced the time required to attend a concert, movie, or football game. In terms of Becker's model, the increased availability of such household capital goods has increased productivity in the home, thereby freeing time from household production and consumption and allowing many women to engage in part- and full-time employment in the labor market.[21] Also, the increasing availability of child care centers has facilitated the transition of married women from work in the home to labor market work.

[21] For a detailed discussion of rising productivity in the home, see Bergmann, op. cit., chap. 12.

4 Declining Birthrates

The presence of children (particularly preschool children) is associated with low participation rates for wives. Child care is a highly time-intensive household productive activity that keeps many wives out of the labor force. Although babysitters, nurseries, husbands, and child care centers can substitute for wives in caring for children, the expense and opportunity cost involved often discourage such substitutions. Over time, the widespread availability and use of birth control techniques, coupled with changing lifestyles, have reduced birthrates *and* compacted the span of time over which a family's children are born. Whereas there were about 3.8 lifetime births per woman in 1957 at the peak of the baby boom, that figure has declined to only 1.9 now. Fewer children reduce associated homemaking responsibilities and free married women for labor market work. Moreover, the compression of the time span over which children are born reduces the amount of time during which many women are absent from the labor force for child care responsibilities and is, therefore, more conducive to their pursuit of a labor market career.

Two points must be added. First, higher wage rates are associated with lower fertility rates. More educated women who can command relatively high wage rates in the labor market tend to have fewer children than less educated women for whom wages are low. Becker's model provides one explanation for this relationship. Child rearing is a highly time-intensive activity, and thus the opportunity cost of children—the income sacrificed by not being in the labor market—is higher for more educated women than for those who are less educated.

The second point is that the presence of young children is currently less of an inhibitor to labor market participation than it has been in the recent past. In fact, the largest increases in labor force participation have been for wives with very young children. In 2013, 62 percent of wives with preschool children participated in the labor force, compared to only 30 percent in 1970. Currently, more than half of all mothers return to work before their youngest children are two years old.

WW3.4

5 Rising Divorce Rates

Marital instability as evidenced in rising divorce rates has undoubtedly motivated many women to establish and maintain labor market ties. Divorce rates rose rapidly in the 1970s and 1980s; and although they have declined slightly since then, they remain much higher than in earlier periods. The economic impact of divorce on women is often disastrous because relatively few women receive substantial alimony or child support payments from their former husbands. All too often the options are poverty, welfare support, or labor market work. In short, more and more married women, not to mention women contemplating marriage, may participate in the labor force as a means of protecting themselves against the financial exigencies of potential divorce. In terms of Figure 2.8, divorced women find themselves with substantially less nonlabor income, and this reduction is an inducement to labor market work.

A word of caution: The cause-and-effect relationships among fertility, divorce rates, and labor force participation are complex and unclear. For example, declines in fertility resulting from more efficient and less costly birth control techniques

3.4 World of Work — The Power of the Pill

The first birth control pill was released to the public in 1960. The pill has allowed women to have nearly certain prevention of pregnancy. This invention has caused far-reaching changes to society, including permitting women to plan their careers and childbearing to a much greater degree than before.

The pill was adopted at different rates depending on marital status. Married women quickly adopted the pill as their preferred method of birth control. Within five years, 41 percent of married women under the age of 30 who employed contraception were using it. However, due to legal and social factors, the pill was more slowly adopted by unmarried single women. The age of legal access to the pill was 21 for all but nine states in 1969. The age of legal access was lowered for nearly all states between 1969 and 1974. Thus, by 1976 nearly three-quarters of all single women aged 18 and 19 and using contraception had tried the pill.

Goldin and Katz exploited these interstate differences in the timing of legal access to the pill to examine its impact on the age of first marriage and the proportion of women in professional occupations. Their analysis indicates that access to the pill can account for about one-third of the rise in the female percentage in professional occupations between 1970 and 1990. Legalized pill access to minors can account for 24–37 percent of the 8.7 percentage point decrease in the proportion of women married before age 23 between the cohorts of women born in the 1940s compared with those born in the early 1950s.

Bailey also utilized interstate differences in timing of legal access to the pill to examine the effects of the pill on female labor supply. Her results show that early access to the pill can account for 3 of the 20 percentage points of increase in labor force participation rates between 1970 and 1990. It can also account for 67 of the 450 additional annual hours worked on average by women aged 16–30 over that period.

Sources: Claudia Goldin and Lawrence F. Katz, "The Power of the Pill: Oral Contraceptives and Women's Career and Marriage Decisions," *Journal of Political Economy,* August 2002, pp. 730–70; and Martha J. Bailey, "More Power of the Pill: The Impact of Contraceptive Freedom on Women's Life Cycle Labor Supply," *Quarterly Journal of Economics,* February 2006, pp. 289–320.

undoubtedly encourage labor force participation. On the other hand, the initial choice of a woman to pursue a labor market career may precipitate the decision to have fewer children. Similarly, the increased likelihood of divorce will tend to reduce fertility because child care is more difficult after a marriage dissolves. Conversely, the presence of few or no children makes divorce less painful and less costly.[22]

6 Expanding Job Accessibility

In addition to a decline in gender discrimination, a variety of other factors have made jobs more accessible to women. First, since World War II there has been a great expansion both absolutely and relatively in the kinds of employment that have traditionally been "women's jobs," such as clerical and secretarial work, retail sales, teaching, and nursing. Second, there has been a long-run shift of the population

[22] For further discussion, you might consult Blau, Ferber, and Winkler, op. cit., pp. 300–303. For an analysis of the effects of switching from mutual consent to unilateral divorce laws, see Raquel Fernandez and Joyce Wong, "Unilateral Divorce, the Decreasing Gender Gap, and Married Women's Labor Force Participation," *American Economic Review,* May 2014, pp. 342–347.

from farms and rural regions to urban areas, where jobs for women are more abundant and more geographically accessible. Third, the availability of part-time jobs has increased. This development has made it easier for women to reconcile labor market employment with housekeeping tasks.

7 Attempts to Maintain Living Standards

The growth of male earnings during the past two decades has been quite stagnant compared to earlier decades. In fact, for some men—particularly low-wage workers and those in industries hurt by imports—*real* weekly earnings are lower today than a decade, or even two decades, ago. Many households have adjusted to these realities by having both spouses work. That is, they have substituted labor market time for household production time to preserve the family's standard of living (defined either absolutely or relative to other households).[23]

In this view, part of the more recent rise in the female labor force participation rate has been necessitated by the family's desire to make ends meet. In some cases, making ends meet implies paying for basic food, clothing, and shelter. In other instances, it means preserving middle- or upper-class lifestyles, including living in comfortable homes, driving nice cars, enjoying household electronic equipment, and taking family trips. Understandably families look for ways to maintain their standards of living, whatever those levels might be. If spouses had not entered the labor force in record numbers during the past two decades, many households would have suffered absolute or relative declines in real income. Undoubtedly many wives entered the labor force to prevent this from happening. In addition, couples may be concerned about their family income compared to other families; the entry of some women into the labor market may encourage other women to enter in order to maintain their families' relative income levels.[24]

Relative Importance

Fuchs has analyzed the various factors that may have contributed to rising female participation rates, trying to discern their comparative significance.[25] He discounts the importance of such considerations as antidiscrimination legislation and the feminist movement, largely on the basis that their timing is bad. That is, the growth of female participation rates predates both the feminist movement and the passage of antidiscrimination laws (Chapter 14). It also predates the stagnant growth of real earnings experienced by many husbands during the past two decades. The problem with attributing rising participation rates for women to the availability of time-saving household goods and related innovations is that cause and effect are unclear. Did innovations such as clothes washers, freezers, fast-food restaurants,

[23] Some doubt has been cast on the hypothesis that married women are increasing work effort in response to declining wages of husbands. See Chinhui Juhn and Kevin M. Murphy, "Wage Inequality and Family Labor Supply," *Journal of Labor Economics,* January 1997, pp. 72–97.

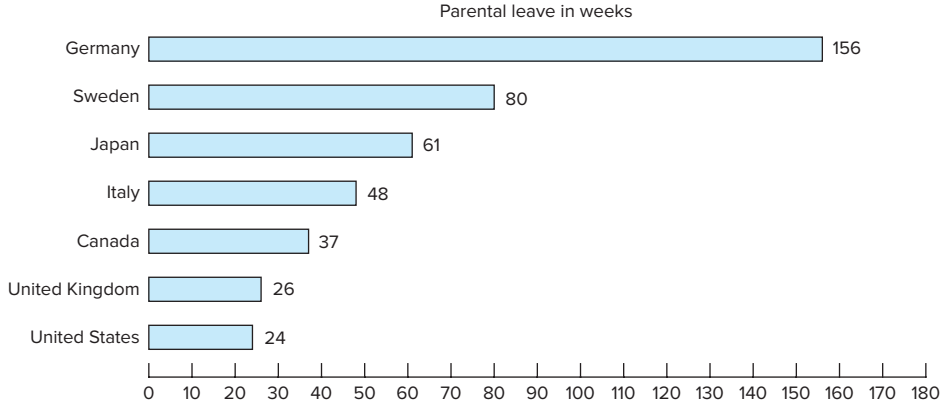
[24] For some evidence consistent with this hypothesis, see David Neumark and Andrew Postlewaite, "Relative Income Concerns and the Rise in Married Women's Employment," *Journal of Public Economics,* October 1998, pp. 157–83.

[25] Victor R. Fuchs, *How We Live* (Cambridge: Harvard University Press, 1983), pp. 127–33.

3.2 Global Perspective

Maximum Duration of Statutory Parental Leave in Weeks

Countries differ greatly in the duration of leave that firms are required to give new parents.



Source: International Labor Organization, *Maternity and Paternity at Work: Law and Practice Across the World* (Geneva: Switzerland, 2014). Data are for 2013. Maternity and parental leave have been combined.

and supermarkets simply appear and thereby free up time that married women could devote to labor market work? Or were these innovations made largely in response to needs that arose when women decided for other reasons to enter the labor force? Fuchs believes that their spread in the United States is the *result* of the rising value of time and the rising female participation rates, rather than a causal factor.

More positively, Fuchs feels that rising real wage rates and the expansion of "women's jobs" in the service industries are the most important reasons for rising female participation rates. Better control of fertility is also deemed significant, but once again cause and effect are difficult to unravel. Do women first decide on labor force participation and, as a consequence of this decision, choose to have fewer children? Or does the decision to have smaller families precede the decision to enter the labor force? Fuchs also contends that the growing probability of divorce compels women to achieve and maintain their ties to the labor market. Smith and Ward are in substantial agreement with Fuchs. Their research leads them to conclude that rising real wage rates directly (by creating incentives to work) and indirectly (by inducing lower birthrates) have accounted for almost 60 percent of the increase in the female labor force that has occurred since World War II.[26]

GP3.2

WW3.5

[26] Smith and Ward, op. cit., pp. S59–90.

3.5 World of Work

Why Do So Few Women Work in New York and So Many in Minneapolis?*

A little noticed fact is that wide variation exists in the labor supply of married women across metropolitan areas. For example, among white non–Hispanic married women aged 25 to 55 with a high school degree in 2000, 79 percent were employed in Minneapolis, but only 52 percent were employed in New York. This is in sharp contrast to the situations in 1940, when the labor supply of this group of women was lower in Minneapolis than in New York. Thus, the current high-employment rate in Minneapolis is the result of much more rapid growth in the labor supply in Minneapolis than in New York.

Using data from the 50 largest metropolitan areas, Dan A. Black, Natalia Kolesnikova, and Lowell J. Taylor examine the cross-city variation in the labor supply of married women. They argue that commuting time plays an important role in the labor force participation decisions of married women, particularly those with young children. For a married couple, greater commuting time will increase the fixed cost of working for both partners. This change can cause one partner to leave the labor force (typically the wife) and induce the other partner (typically the husband) to increase work hours.

The evidence is consistent with their hypothesis. Commuting time does vary substantially across metropolitan areas. The daily average in 2000 was 54 minutes for married men and 47 minutes for married women. Commuting time for married women ranged from a low of 38 minutes in Dayton to a high of 63 minutes in New York.

Their results indicate that commuting can explain a large portion of the cross-city variation in the labor supply of married women. They find that each one minute increase in commuting time will lower the labor force participation rate by 0.3 percentage points for high school educated white non–Hispanic married women. Thus, commuting time can explain about one-third of the differences in the labor force participation rates between the longest and shortest commuting distance cities. In addition, they find that cities with the largest increases in commuting time between 1980 and 2000, had the smallest growth in the labor supply of married women.

* Based on Dan A. Black, Natalia Kolesnikova, and Lowell J. Taylor, "Why Do So Few Women Work in New York (And So Many in Minneapolis)? Labor Supply of Married Women Across U.S. Cities," *Journal of Urban Economics*, January 2014, pp. 59–71.

Stalling of Female Labor Supply?

The labor supply of women increased sharply in the 1980s. Between 1979 and 1991, the annual hours worked for married women aged 25 to 54 rose by 276 hours.[27] The figure for their single counterparts was 118 hours. The next decade was marked by smaller increases in the labor supply of women. In the 2000s, there was a decline in the labor supply of both married and single women who were aged 25 to 54. Between 1999 and 2009, the annual hours worked fell by 13 hours and 101 hours for married women and single women, respectively. Among married women, the declines were greater for those with a college degree and those with no children under the age of 18.

Diane Macunovich has examined these changes in the labor supply of prime-aged women in the 2000s. For women with a college degree, she finds that one-half of their 52-hour drop in hours worked was due to an increase in the number of

[27] The source of this figure and the following statistics is Diane J. Macunovich, "Reversals in the Patterns of Women's Labor Supply in the United States, 1977–2009," *Monthly Labor Review*, November 2010, pp. 16–36.

children.[28] For other groups of women, she finds that little or none of the changes in the labor supply can be attributed to economic or demographic factors. She speculates that the recent shifts in the labor supply of prime-aged women may be the result of changes in attitudes with regards to spending time in the labor market and at home.

Francine Blau and Lawrence Kahn find that the female labor force participation rate in the United States is falling relative to other industrialized countries.[29] In 1990, the labor participation rate of females aged 25 to 54 ranked 6th out of 22 economically advanced countries. By 2010, that rate dropped to 17th of 22 countries. Their analysis indicates that a significant portion of the relative decline in the U.S. female labor participation rate is due to an expansion of family-friendly policies in other countries such as parental leave programs and part-time work options.

Racial Differences

Important gender differences mark the effect of race on labor force participation rates.

Females

The participation rates of African-American and white women are nearly identical. This situation was not always the case. In the past, the participation rate of African-American women exceeded that of white women. For example, in the mid-1950s, the difference between the participation rates of African-American and white women was 12 to 15 percentage points. The gap has been closed because the rise in the participation rate of women (discussed in the previous section) has been concentrated among white women. Relatively little change has occurred in the participation of African-American women because their participation traditionally has been high.

The decline in the racial gap in participation may be a critical factor in explaining why the ratio of African-American incomes to white incomes has increased only modestly in the past two decades or so. The income gains for African-American families, which may have resulted from antidiscrimination legislation and more enlightened attitudes toward minorities, may have been largely offset by the relatively larger numbers of white married women entering the labor force.[30]

Males

Since the 1950s, a gap has evolved between the participation rates of African-American males and white males. Thus, for example, in 1955 the participation rates of both groups were approximately 85 percent. But by 2000 the participation rate of white males was 75 percent compared to only 69 percent for African-American males. The gap has stabilized at about 6–7 percent since the mid-1990s.

[28] The source of this figure and the following statistics is Diane J. Macunovich, "Reversals in the Patterns of Women's Labor Supply in the United States, 1977–2009," *Monthly Labor Review*, November 2010, pp. 16–36.
[29] Francine D. Blau and Lawrence M. Kahn, "Female Labor Supply: Why Is the U.S. Falling Behind?" *American Economic Review*, May 2013, pp. 251–256.
[30] In this section, we have focused on the factors that explain the rise in female labor market employment. For an interesting discussion of the effects of women's labor force participation on marriage, fertility, divorce, and the general well-being of family members, see Blau, Ferber, and Winkler, op. cit., chaps. 13–14.

Why the significantly lower participation rates for African-American men? There is no consensus on this question, but several hypotheses have been offered. First, "a demand-side" hypothesis suggests that the difference may be largely attributable to poorer labor market opportunities for African-American males in general, as reflected in relatively lower wages and weaker prospects for finding jobs. African-American males have lower average levels of educational attainment than white males. Also, on average, the quality of education (as measured by test scores) received by African-American males is lower than that for white males. In this demand-side view, discrimination as embodied in poorer education, lower wages, less desirable jobs, and the tendency to be the "last hired and first fired" explains why some African-American males remain outside the labor force. A spatial mismatch also may exist between African-American workers and employment opportunities because jobs have moved out of the central cities, where substantial African-American populations are concentrated.[31]

A second view explains the high labor market inactivity of African-Americans as residing primarily on the supply side of the market. Welch[32] has argued that non–labor market opportunities may have improved for African-Americans, affording them more attractive alternatives to labor market work. What are those non–labor market opportunities? One is the receipt of Social Security or public assistance. Indeed, we found in Chapter 2 that the increased availability and enhanced generosity of public income maintenance programs encourage income receivers of all races to withdraw from the labor force (see Figure 2.9 in particular). Because African-Americans are disproportionately represented among the lowest-income groups in our society, we would expect the participation rates of African-Americans to be less than those of whites. Welch notes that in 1980 over 30 percent of African-American men aged 20–24 and almost 22 percent of African-American men aged 35–44 either received Social Security or public assistance or lived with someone who did. Comparable figures for white males were only 13 and 10 percent, respectively. Welch also ponders whether illegal activities are more attractive than labor market work for many African-American men. He points out that young African-American males are six to seven times as likely to be in jail as are whites. Thus, in 1980 some 4.6 percent of African-Americans aged 20–24 were incarcerated as compared to only 0.7 percent for whites. Since 1980, the incarceration rate has risen particularly for African-American males. By 1999, 3 percent of white males and 20 percent of African-American males had served some time in jail by their early 30s.[33]

[31] For an overview of the spatial mismatch hypothesis, see Laurent Gobillon, Harris Selod, and Yves Zenou, "The Mechanisms of Spatial Mismatch," *Urban Studies,* November 2007, pp. 2401–427.
[32] Finis Welch, "The Employment of Black Men," *Journal of Labor Economics,* January 1990, pp. S26–74.
[33] Becky Pettit and Bruce Western, "Mass Imprisonment and the Life Course: Race and Class Inequality in U.S. Incarceration," *American Sociological Review,* April 2004, pp. 151–69. For evidence indicating that the high incarceration among African-American males has lowered the fertility and increased the school enrollment and early employment rates among young African-American females, see Stéphane Mechoulan, "The External Effects of Black-Male Incarceration on Black Females," *Journal of Labor Economics,* January 2011, pp. 1–35.

Third, differences in health status may play a role in the different participation rates of older African-American and white males. Bound, Schoenbaum, and Waidmann conclude that racial differences in age, education, and health status can account for 44 percent of the African-American to white difference in participation of males aged 51–61.[34] Evidence exists that some of these health differences may partly be the result of African-American males holding more physically demanding and stressful jobs.

Finally, the relatively lower participation rate for African-American married males may also reflect the relatively high participation rate of African-American wives noted earlier. In terms of Becker's model, African-American women may incur less discrimination in the labor market than African-American men, making it rational for relatively more African-American women and relatively fewer African-American men to participate in labor market work.

CYCLIC CHANGES IN PARTICIPATION RATES

Our discussion has concentrated on long-term or secular changes in participation rates. We must now recognize that cyclic changes also occur. Let's consider how cyclic fluctuations might affect a family in which one spouse engages in labor market work while the other performs productive activities within the home. Assume that a recession occurs, causing the employed spouse to lose her or his job. The net effect on overall participation rates depends on the size of the added-worker effect and the discouraged-worker effect.

Added-Worker Effect

The ***added-worker effect*** is the idea that when the primary breadwinner in a family loses his or her job, other family members will temporarily enter the labor force in the hope of finding employment to offset the decline in the family's income. The rationale involved is reminiscent of Chapter 2's income effect. Specifically, one spouse's earned income may be treated as nonlabor income from the standpoint of the other spouse. In our illustration, the nonemployed family member receives an intrahousehold transfer of some portion of the employed spouse's earnings. From the perspective of the person working in the home, this transfer is nonlabor income. In terms of Figure 2.8, the spouse's job loss will reduce nonlabor income as measured on the right vertical axis. Other things being equal, a decrease in nonlabor (transfer) income tends to cause one to become a labor force participant. This is the underlying rationale of the added-worker effect.[35]

[34] John Bound, Michael Schoenbaum, and Timothy Waidmann, "Race and Education Differences in Disability Status and Labor Force Attachment in the Health and Retirement Survey," *Journal of Human Resources,* Suppl. 1995, pp. S227–67.

[35] For an examination of the added-worker effect, see J. Melvin Stephens, "Worker Displacement and the Added-Worker Effect," *Journal of Labor Economics,* July 2002, pp. 504–37. For examination of the added worker effects of the 2007-2009 recession, see Martha A. Starr, "Gender, Added-Worker effects, and the 2007–2009 recession: Looking Within the Household," Review of Economics of the Household, June 2014, pp 209–235.

Discouraged-Worker Effect

The ***discouraged-worker effect*** works in the opposite direction. The discouraged-worker effect suggests that during a recession some unemployed workers (for example, the unemployed spouse in our illustration) become so pessimistic about finding a job with an acceptable wage rate that they cease to actively seek employment and thereby temporarily become nonparticipants. This phenomenon can be explained in terms of the substitution effect. Recessions generally entail declines in the real wages available to unemployed workers and new job seekers, increasing the price of income (that is, increasing the amount of work time that must be expended to earn $1 of goods) and decreasing the price of leisure. This causes some workers to substitute leisure (nonparticipation) for job search. Other things being equal, a decrease in the wage rate will cause some individuals to withdraw from the labor force now that the wage rate available to them is lower. Remember that the substitution effect suggests that a decline in the wage rate available to a worker will decrease the incentive to engage in labor market work.[36]

Procyclic Labor Force Changes

These two effects influence participation rates and labor force size in opposite ways. The added-worker effect increases and the discouraged-worker effect decreases participation rates and labor force size during an economic downturn. Which effect is dominant? What actually happens to participation rates over the business cycle? Empirical research generally indicates that the discouraged-worker effect is dominant, as is evidenced by the fact that the aggregate labor force participation rate varies inversely with the unemployment rate. When the unemployment rate increases, the participation rate falls and vice versa.

Why does the discouraged-worker effect apparently outweigh the added-worker effect? Why does the size of the labor force vary in a procyclic fashion? The conventional wisdom is that the discouraged-worker effect applies to many more households than the added-worker effect. For example, if the nation's unemployment rate rises from, say, 5 to 8 percent, only the 3 percent or so of all families that now contain an additional unemployed member will be subject to the added-worker effect. On the other hand, worsening labor market conditions evidenced by the increase in the unemployment rate and the decline in real wages may discourage actual and potential labor force participants in *all* households. Thus, as the economy moves into a recession, young people who are deciding whether to continue school or drop out to seek employment will note that wage rates are less attractive and jobs more difficult to find. Many of them will decide to stay in school rather than participate in the labor force.

Procyclic changes in the labor force size also have been explained in terms of the *timing* of labor force participation by some individuals. For example, many married

[36] For an evaluation of the discouraged-worker effect, see Yolanda K. Kodrzycki, "Discouraged and Other Marginally Attached Workers: Evidence on Their Role in the Labor Market," *New England Economic Review,* May/June 2000, pp. 35–40. Also see Luca Benati, "Some Empirical Evidence on the 'Discouraged Worker' Effect," *Economics Letters,* March 2001, pp. 387–95.

women are marginally attached to the labor force in that they plan to engage in labor market work for, say, only half of their adult years. The other half of their time will be spent in household production. Given this planned overall division of time, it is only rational for such women to participate in the labor force in prosperous times when jobs are readily available and real wages are relatively high and, conversely, to be nonparticipants when unemployment is high and available wage rates are low.[37]

The procyclic changes in labor force size are of more than idle academic interest. Such changes have a significant bearing on the magnitude of the official unemployment rate and hence an indirect bearing on macroeconomic policy (Chapter 18). The apparent dominance of the discouraged-worker effect over the added-worker effect means that the labor force shrinks (or at least grows at a below-normal rate) during recession, and the official unemployment rate understates unemployment. During economic expansions, the discouraged-worker effect becomes an "encouraged-worker" effect, and the added-worker effect becomes a "subtracted-worker" effect. The former dominates the latter, and the labor force expands as a result. This means there is a larger-than-normal increase in the labor force during an economic expansion that keeps the official unemployment rate higher than would otherwise be the case. In short, cyclic changes in participation rates cause the official unemployment rate to understate unemployment during a cyclic downswing and to overstate it during an upswing.

3.2 *Quick Review*

- The labor force participation rate (LFPR) measures the percentage of the potential labor force that is either employed or officially unemployed.
- Two pronounced secular trends in LFPRs are the declining rates of older men and the rising rates of working-age women.
- The LFPRs for African-American women have consistently exceeded the rates for white women; the rates for African-American males have dropped far below those of white males.
- The overall LFPR falls as the economy recedes and rises as the economy expands, implying that the discouraged-worker effect (encouraged-worker effect) exceeds the added-worker effect (subtracted-worker effect).

Your Turn

Suppose a hypothetical country has a total population of 100 million, of which 7 million are unemployed (but actively seeking work), 15 million are under 16 or institutionalized, 25 million are eligible to work but not in the labor force, and 53 million are employed. What is the LFPR? (*Answer:* See page 598.)

[37] See Jacob Mincer, "Labor-Force Participation and Unemployment: A Review of Recent Evidence," in R. A. Gordon and M. S. Gordon (eds.), *Prosperity and Unemployment* (New York: John Wiley & Sons, Inc., 1966), pp. 73–112.

HOURS OF WORK: TWO TRENDS

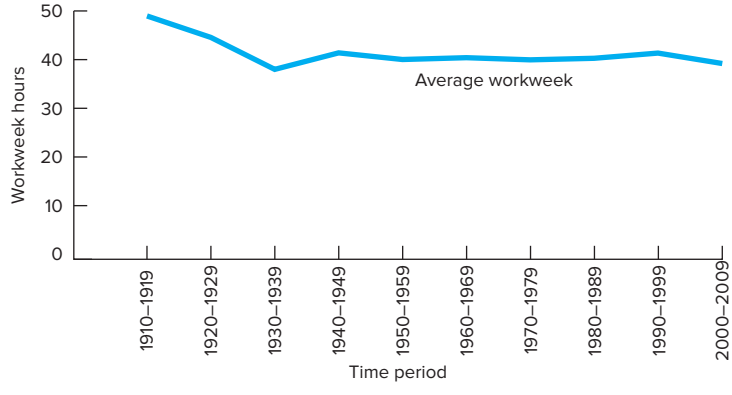
Observe in Figure 3.1 that the total amount of labor supplied in the economy depends not only on the number of labor force participants but also on the average number of hours worked per week and per year by those participants; therefore, let's now consider what has happened to hours of work over time.

Figure 3.6 provides an overview of secular changes in the average workweek. The figure shows decade averages of the workweek for production workers in U.S. manufacturing industries. Two important observations are apparent. First, hours of work declined steadily from 1910 to World War II. The average workweek fell by almost 16 percent [(49.4 – 41.5)/49.4] over the 1910–1919 to 1940–1949 period.[38] Second, the average workweek has changed little since the 1940s. Although there is no universally accepted explanation of these trends, interesting and plausible theories have been put forth.

Workweek Decline, 1900–1940

The pre–World War II decline in the workweek is explainable in terms of the basic work–leisure model described in Chapter 2. The essential contention is that the declining workweek is simply a supply response to historically rising real wages and earnings. More precisely, given (1) worker income–leisure preferences, (2) nonwage incomes, and (3) the assumption that leisure is a normal good, rising wage rates over time will reduce the number of hours individuals want to work, provided the income effect exceeds the

FIGURE 3.6 Average Workweek
The average workweek declined between 1910 and 1940. It has changed little since then.



Source: John Brack and Keith Cowling, "Advertising and Labour Supply: Workweek and Workyear in U.S. Manufacturing Industries 1919–1976," *Kyklos,* no. 2 (1983), pp. 285–303. Workweek data for 1970–2009 are from *Employment and Earnings*.

[38] The shorter hours of the 1930s are largely explainable in terms of the Great Depression; the shorter workweek was widely instituted to spread the smaller demand for labor among more workers.

3.6 World of Work — Time Stress

Surveys show that many workers face *time stress:* a lack of time to do their desired activities. Among U.S. married couples in which at least one spouse works, 44 percent of men and 55 percent of women say that they are always or often time stressed. Surveys in other countries also indicate that many married couples are time stressed. Australians report a similar amount of time stress as Americans. About one-third of Germans report they are stressed for time, while 70 percent of South Koreans report they suffer this condition.

Using data from these four countries, Hamermesh and Lee examined the factors causing time stress among married couples. Not surprisingly, increases in hours devoted to market work or household production intensify time stress. Holding constant market and household hours worked, they found that increases in earnings lead to greater time stress. They assert that people feel that they are in a time crunch because they don't have enough time to consume the goods they can purchase with their higher income. This does not mean higher-income people would be happy if they earned less. They are assumed to be maximizing their utility, but they are unhappy about the time limits they face. Consistent with that assumption, higher-income individuals indicate that they are happier with their income and life in general than their lower-income counterparts.

Some interesting patterns related to household production also appeared in these data. Household production work appears to generate less time stress than an equivalent amount of market work. Increased efficiency in household production should reduce the amount of time stress. Consistent with that conjecture, an improvement in health status from fair or poor to at least good reduced time stress by the equivalent of at least 10 hours of market work per week.

Source: Daniel S. Hamermesh and Jungmin Lee, "Stressed Out on Four Continents: Time Crunch or Yuppie Kvetch?" *Review of Economics and Statistics,* May 2007, pp. 374–83.

substitution effect. And, in fact, a substantial amount of empirical evidence indicates that the net effect of wage increases on hours of work has been negative.

Post–World War II: Workweek Stability

But how does one explain the relative constancy of the workweek in the postwar era? Real wages have continued to rise; but either the substitution effect has somehow offset the income effect, or perhaps some additional factors have been at work in recent decades to offset the tendency of higher wage rates to reduce the workweek.[39]

WW3.6

Kniesner argues that educational attainment has played an important role in the constancy of the workweek since World War II.[40] He hypothesizes that the supply

[39] Although the average workweek has changed little in the past 50 years, the demographic composition of the workforce has changed dramatically. For more on this point, see Ellen R. McGrattan and Richard Rogerson, "Changes in Hours Worked since 1950," *Quarterly Review* (Federal Reserve Bank of Minneapolis), Winter 1998, pp. 2–19.

[40] Thomas J. Kniesner, "The Full-Time Workweek in the United States, 1900–1970," *Industrial and Labor Relations Review,* October 1976, pp. 3–5. See also Ethel B. Jones, "Comment," and Kniesner, "Reply," *Industrial and Labor Relations Review,* April 1980, pp. 379–89.

of labor is positively related to education. Furthermore, he notes that increases in educational attainment have been much greater in the postwar period than the prewar period; in the 1910–1940 period, the increase in the median years of schooling completed was only about 6 percent compared to a 34 percent increase in the 1940–1970 period. Kniesner argues that these differences in educational attainment account for the two trends evidenced in Figure 3.6.

Why might more education increase or sustain hours of work? First, a change in preferences may be involved. Education is a means of enhancing one's earning power in the labor market. Decisions to acquire more education may, therefore, reflect a change in tastes favoring a stronger commitment to labor market work. Second, more educated workers generally acquire more pleasant jobs—that is, jobs that are less physically demanding, less structured, more challenging, and so forth. Other things being equal, such job characteristics would make workers less willing to reduce the workweek. Finally, a more educated workforce may increase employer resistance to a declining workweek. The reason for this is that employers incur more fixed costs in recruiting more educated workers and in training them over their job tenures compared to less educated workers. A shorter workweek will increase these fixed costs per worker hour and thus will increase the overall hourly cost of any given quantity of labor. As their labor forces have become more educated, employers have stiffened their resistance to a shorter workweek.[41]

Three explanations in addition to changes in educational attainment have been suggested for the constancy of the workweek. First, the ***Fair Labor Standards Act of 1938*** (FLSA) requires employers to pay a wage premium for all hours worked in excess of 40 per week. This legislation tended not only to reduce the length of the workweek but also to standardize it at 40 hours.[42] Second, the rise in the marginal income tax rates since the start of World War II has translated into smaller increases in net (aftertax) wage rates. Thus, the negative supply, or hours of work, response has been much smaller in the postwar era than in earlier decades. Finally, advertising has increased quantitatively and in effectiveness since World War II. This may have increased the desires of workers for more goods and services and therefore induced them to work more hours than otherwise would be the case.

[41] Employer resistance to a shrinking workweek may be reinforced by the growth of fringe benefits that has occurred in the postwar period (Chapter 7). Employer expenditures for such benefits as worker life and health insurance are also fixed costs on a per worker basis, and as with recruitment and training costs, a shortened workweek would entail higher hourly labor costs.

[42] For contrary evidence suggesting the FLSA has had little impact on overtime hours, see Stephen J. Trejo, "Does the Statutory Overtime Premium Discourage Long Workweeks?" *Industrial and Labor Relations Review,* April 2003, pp. 530–51.

Chapter Summary

1. The aggregate quantity of labor supplied depends on population size, the labor force participation rate, and the number of hours worked weekly and annually.
2. It is fruitful to examine and explain participation rates in terms of Becker's time allocation model. This model views households as producing utility-yielding commodities by combining goods and time. In this context, household members allocate their time to labor market work, household production, and consumption on the basis of comparative advantage.
3. The labor force participation rate is the actual labor force as a percentage of the potential or age-eligible population.
4. In the post–World War II period, the aggregate participation rate has risen from about 59 percent in 1950 to about 63 percent in 2014. This is basically the result of greater participation rates of women (particularly married women), which have more than offset the declining participation rates of males.
5. The participation rate of older males fell and has rebounded in recent years. The changes are attributed to (1) rising real wages and earnings, (2) the availability of public and private pensions, (3) increasing access to disability benefits, (4) rising educational levels, and (5) increasing labor force participation of older wives.
6. Rising participation rates for women have been caused by *(a)* rising relative wage rates for women, *(b)* stronger female preferences for labor market work, *(c)* rising productivity within the household, *(d)* declining birthrates, *(e)* greater marital instability, *(f)* the greater accessibility of jobs, and *(g)* attempts to maintain family standards of living. In the 2000s, the labor supply of women has stopped increasing.
7. The participation rates of African-American women and white women are nearly identical today. In the past, the rates of African-American women exceeded those of white women.
8. The participation rates of African-American males have declined over time and are currently 6–7 percentage points lower than for white males. Some analysts stress such demand-side factors as labor market discrimination, inferior educational opportunities, and the geographic inaccessibility of jobs in explaining lower African-American rates. Others focus on such supply-side factors as the availability of public assistance and illegal activities.
9. Cyclic changes in participation rates reflect the net impact of the added-worker and discouraged-worker effects. The added-worker effect suggests that when a family's primary breadwinner loses his or her job, other family members will become labor market participants to sustain the family's income. The discouraged-worker effect indicates that during recession, some unemployed workers will become pessimistic about their prospects for reemployment and will, therefore, withdraw from the labor force. Most empirical studies suggest that the discouraged-worker effect is dominant, with the result that the aggregate labor force participation rate varies inversely with the unemployment rate.

10. The average workweek and workyear declined during the 1910–1940 period, but since World War II both have been quite stable. The earlier workweek and workyear declines have been explained in terms of the income effect's domination of the substitution effect as real wage rates have risen historically. The post–World War II stability of the workweek and workyear has been attributed to increases in education as well as other factors.

Terms and Concepts

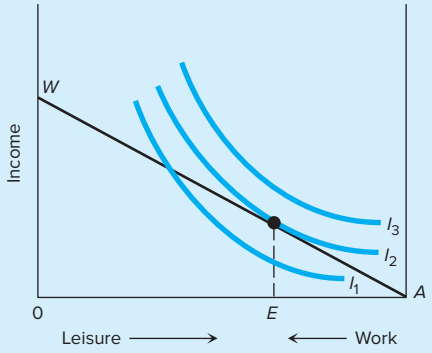
Becker's model of the allocation of time
time-intensive and goods-intensive commodities
potential and actual labor forces
labor force participation rate
added-worker and discouraged-worker effects
Fair Labor Standards Act of 1938

Questions and Study Suggestions

1. Briefly discuss the major components of the aggregate labor supply.
2. In what specific ways does Becker's model of the allocation of time differ from the simple work–leisure choice model? Compare the functioning of the income and substitution effects in each of the two models. Do the two effects have the same impact on labor market work in both models?
3. In 2014 the United States had a population of 319 million, of which 71 million were either under 16 years of age or institutionalized. Approximately 156 million people were either employed or unemployed but actively seeking work. What was the participation rate in 2014?
4. What has happened to the aggregate labor force participation rate in the post–World War II period? To the participation rates of males and females?
5. What factors account for the declining participation rates of older males?
6. What factors account for the increase in the participation rates of married women? Use a work–leisure diagram (similar, for example, to Figure 2.8) to explain how *each* of these factors might individually alter either the indifference curves or the budget lines of women and make labor force participation more likely.
7. Compare the participation rates of *(a)* white and African-American women and *(b)* white and African-American men. In each case explain any differences.
8. "The ratio of the incomes of African-American families to the incomes of white families has increased quite slowly in the past two or three decades, despite legislation and a variety of public policies to ameliorate discrimination. One may, therefore, conclude that government programs have failed to lessen racial discrimination." Discuss critically.
9. Use a work–leisure diagram to demonstrate that *(a)* if African-Americans have labor market opportunities that are inferior to those of whites and *(b)* nonlabor income is available in the form of, say, disability benefits, African-Americans

will have lower participation rates even though the work–leisure preferences (indifference curves) of African-Americans and whites are identical.

10. "Empirical evidence for the United States suggests that labor force participation varies directly with unemployment." Do you agree? Explain in terms of the discouraged-worker and added-worker effects.
11. "The added-worker effect can be explained in terms of the income effect, while the discouraged-worker effect is based on the substitution effect." Do you agree?
12. What has happened to the length of the workweek and workyear during the past hundred years? Explain any significant trends.
13. The accompanying diagram restates the basic work–leisure choice model presented in Chapter 2. Use this diagram to explain the declining workweek occurring in the pre–World War II period, making explicit the assumptions underlying your analysis. We noted in the present chapter that the stability of the workweek in the post–World War II era has been attributed by various scholars to such considerations as *(a)* higher taxes on earnings, *(b)* acquisition of more education, and *(c)* advertising. Make alterations in the indifference curves or budget line of the diagram to indicate how *each* of these three factors might contribute to a relatively stable workweek despite rising before-tax real wages.



Internet Exercise

Who Is Participating More in the Labor Force? Who Less?

Go to the Bureau of Labor Statistics website for the current population survey **(http://www.bls.gov/cps/cpsdbtabs.htm)** and select "Historical Data for Series in the Monthly Employment Situation News Release" to find information about civilian labor force participation rates (LFPRs) and civilian employment–population ratios (EPRs).

1. What were the LFPRs for men and women in January 1950 and for the most recent month shown? Which rate has increased over this period? Which has declined? What are some possible explanations for these changes?
2. What has been the combined effect of these two trends on the overall labor force participation rate, 1950 to the present? (In your answer, provide the specific overall LFPRs for January 1950 and the most recent month shown.)

3. What were the LFPRs for white women and African-American women in January 1955 and for the most recent month shown? What was the gap in these rates at the beginning of the period and the end of the period? What are some possible explanations for this change?
4. What was the overall civilian employment–population ratio for the most recent month shown? Why are overall EPRs lower than overall LFPRs? (Use this book's glossary definitions for help with this question.)

Internet Links

The Bureau of Labor Statistics website provides many detailed statistics for labor force participation and hours of work (**www.bls.gov**).