

SEVENTH EDITION

LABOR ECONOMICS

GEORGE J. BORJAS

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Labor Economics

Seventh Edition

George J. Borjas

Harvard University





LABOR ECONOMICS, SEVENTH EDITION

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To Sarah, Timothy, and Rebecca

Preface to the Seventh Edition

The original motivation for writing *Labor Economics* grew out of my years of teaching labor economics to undergraduates. After trying out many of the textbooks in the market, it seemed to me that students were not being exposed to what the essence of labor economics was about: to try to *understand* how labor markets work. As a result, I felt that students did not really grasp *why* some persons choose to work, while other persons withdraw from the labor market; *why* some firms expand their employment at the same time that other firms are laying off workers; or *why* earnings are distributed unequally in most societies.

The key difference between *Labor Economics* and competing textbooks lies in its philosophy. I believe that knowing the *story* of how labor markets work is, in the end, more important than showing off our skills at constructing elegant models of the labor market or remembering hundreds of statistics and institutional details summarizing labor market conditions at a particular point in time.

I doubt that many students will (or should!) remember the mechanics of deriving a labor supply curve or the way that the unemployment rate is officially calculated 10 or 20 years after they leave college. However, if students could remember the *story* of the way the labor market works—and, in particular, that workers and firms respond to changing incentives by altering the amount of labor they supply or demand—the students would be much better prepared to make informed opinions about the many proposed government policies that can have a dramatic impact on labor market opportunities, such as a “workfare” program requiring that welfare recipients work or a payroll tax assessed on employers to fund a national health care program or a guest worker program that grants tens of thousands of entry visas to high-skill workers. The exposition in this book, therefore, stresses the *ideas* that labor economists use to understand how the labor market works.

The book also makes extensive use of labor market statistics and reports evidence obtained from hundreds of research studies. These data summarize the stylized facts that a good theory of the labor market should be able to explain, as well as help shape our thinking about the way the labor market works. The main objective of the book, therefore, is to survey the field of labor economics with an emphasis on *both* theory and facts. The book relies much more heavily on “the economic way of thinking” than competing textbooks. I believe this approach gives a much better understanding of labor economics than an approach that minimizes the story-telling aspects of economic theory.

Requirements

The book uses economic analysis throughout. *All* of the theoretical tools are introduced and explained in the text. As a result, the only prerequisite is that the student has some familiarity with the basics of microeconomics, particularly supply and demand curves. The exposure acquired in the typical introductory economics class more than satisfies this prerequisite. All other concepts (such as indifference curves, budget lines, production functions, and isoquants) are motivated, defined, and explained as they appear in our story. The book does not make use of any mathematical skills beyond those taught in high school algebra (particularly the notion of a slope).

Labor economists also make extensive use of econometric analysis in their research. Although the discussion in this book does not require any prior exposure to econometrics, the student will get a much better “feel” for the research findings if they know a little about how labor economists manipulate data to reach their conclusions. The appendix to Chapter 1 provides a simple (and very brief) introduction to econometrics and allows the student to visualize how labor economists conclude, for instance, that wealth reduces labor supply, or that schooling increases earnings. Additional econometric concepts widely used in labor economics—such as the difference-in-differences estimator or instrumental variables—are introduced in the context of policy-relevant examples throughout the text.

Changes in the Seventh Edition

The Seventh Edition continues and expands traditions established in earlier editions. In particular, the text has a number of new detailed policy discussions and uses the evidence reported in state-of-the-art research articles to illustrate the many applications of modern labor economics. As before, the text continues to make frequent use of such econometric tools as fixed effects, the difference-in-differences estimator, and instrumental variables—tools that play a central role in the toolkit of labor economists. In keeping with my philosophy that textbooks are not meant to be encyclopedias, some of the material that had been a staple in earlier editions has been shortened and sometimes even excluded, so that the Seventh Edition is roughly the same length as previous editions.

Users of the textbook reacted favorably to the substantial rearrangement of material (mainly of labor supply) that I carried out in previous editions. The Seventh Edition continues this reframing by tightening up and bringing together much of the discussion on immigration. Specifically, I have moved the derivation of the immigration surplus model to the general discussion of international migration in the labor mobility chapter. This rearrangement of the material gave me the opportunity to add a new section that shows how the gains from immigration can be greatly increased if immigrants generate human capital externalities in the receiving country’s labor market. The extension of the immigration surplus model allows for an even more policy-relevant (and economically interesting) coverage of an important topic—a topic that many students find to be a particularly useful application of the theoretical models of labor economics.

The last edition introduced a Mathematical Appendix that appears at the end of the textbook. This appendix presents a mathematical version of some of the canonical models in labor economics, including the neoclassical model of labor-leisure choice, the model of labor demand, and the schooling model. It is important to emphasize that the Mathematical Appendix is an “add-on.” None of the material in this appendix is a prerequisite to reading or understanding any of the discussion in the core chapters of the textbook. Instructors who like to provide a more technical derivation of the various models can use the appendix as a takeoff point for their own presentation. Many instructors welcomed the addition of the mathematical appendix to the textbook. I, in turn, would truly welcome any suggestions about how the appendix can be expanded in future editions.

Among the specific changes contained in the Seventh Edition are:

1. Several new “Theory at Work” boxes. The sidebars now include a discussion of how workers take advantage of the institutional features of the Earned Income Tax Credit

to “bunch up” their hours and ensure they receive the maximum subsidy; the interesting relation between increases in the minimum wage and teenage drunk driving; the important role that “Rosenwald schools” played in narrowing the education gap between white and African-American workers; and the labor market impact of explicit gender discrimination in employment ads in China.

2. A careful updating of all the data tables in the text. To the extent possible, the tables now include information on the rapidly growing demographic group of “Asians” in the U.S. labor market and the text often discusses the differences between Asians and other racial/ethnic groups.
3. A careful summary and discussion of unemployment trends in the United States since the financial crisis of 2008 and the subsequent Great Recession.
4. New sections that discuss the labor market effects of Obamacare; the experimental evidence on the link between various methods of incentive pay for teachers and student achievement; the labor market impact of the explosive growth in trade with China; the potentially important role played by the human capital spillovers presumably generated by high-skill immigration; and the link between compensating differentials and income taxes.

As in previous editions, each chapter contains “Web Links,” guiding students to websites that provide additional data or policy discussions. There is an updated list of “Selected Readings” that includes both standard references in a particular area as well as recent applications. Finally, each chapter in the Seventh Edition continues to offer 15 end-of-chapter problems, but there is at least one brand new problem in each chapter.

Organization of the Book

The instructor will find that this book is much shorter than competing labor economics textbooks. The book contains an introductory chapter, plus 11 substantive chapters. If the instructor wished to cover all of the material, each chapter could serve as the basis for about a week’s worth of lectures in a typical undergraduate semester course. Despite the book’s brevity, the instructor will find that all of the key topics in labor economics are covered. The discussion, however, is kept to essentials as I have tried very hard not to deviate into tangential material, or into 10-page-long ruminations on my pet topics.

Chapter 1 presents a brief introduction that exposes the student to the concepts of labor supply, labor demand, and equilibrium. The chapter uses the “real-world” example of the Alaskan labor market during the construction of the oil pipeline to introduce these concepts. In addition, the chapter shows how labor economists contrast the theory with the evidence, as well as discusses the limits of the insights provided by both the theory and the data. The example used to introduce the student to regression analysis is drawn from “real-world” data—and looks at the link between differences in mean wages across occupations and differences in educational attainment as well as the “female-ness” of occupations.

The book begins the detailed analysis of the labor market with a detailed study of labor supply and labor demand. Chapter 2 examines the factors that determine whether a person chooses to work and, if so, how much, while Chapter 3 examines the factors that determine how many workers a firm wants to hire. Chapter 4 puts together the supply decisions of workers with the demand decisions of employers and shows how the labor market “balances out” the conflicting interests of the two parties.

The remainder of the book extends and generalizes the basic supply–demand framework. Chapter 5 stresses that jobs differ in their characteristics, so that jobs with unpleasant working conditions may have to offer higher wages in order to attract workers. Chapter 6 stresses that workers are different because they differ either in their educational attainment or in the amount of on-the-job training they acquire. These human capital investments help determine the economy’s wage distribution. Chapter 7 discusses how changes in the rate of return to skills in the 1980s and 1990s changed the wage distribution in many industrialized economies, particularly in the United States. Chapter 8 describes a key mechanism that allows the labor market to balance out the interests of workers and firms, namely labor turnover and migration.

The final section of the book discusses a number of distortions and imperfections in labor markets. Chapter 9 analyzes how labor market discrimination affects the earnings and employment opportunities of minority workers and women. Chapter 10 discusses how labor unions affect the relationship between the firm and the worker. Chapter 11 notes that employers often find it difficult to monitor the activities of their workers, so that the workers will often want to “shirk” on the job. The chapter discusses how different types of incentive pay systems arise to discourage workers from misbehaving. Finally, Chapter 12 discusses why unemployment can exist and persist in labor markets.

The text uses a number of pedagogical devices designed to deepen the student’s understanding of labor economics. A chapter typically begins by presenting a number of stylized facts about the labor market, such as wage differentials between blacks and whites or between men and women. The chapter then presents the story that labor economists have developed to understand why these facts are observed in the labor market. Finally, the chapter extends and applies the theory to related labor market phenomena. Each chapter typically contains at least one lengthy application of the material to a major policy issue, as well as several boxed examples showing the “Theory at Work.”

The end-of-chapter material also contains a number of student-friendly devices. There is a chapter summary describing briefly the main lessons of the chapter; a “Key Concepts” section listing the major concepts introduced in the chapter (when a key concept makes its first appearance, it appears in **boldface**). Each chapter includes “Review Questions” that the student can use to review the major theoretical and empirical issues, a set of 15 problems that test the students’ understanding of the material, as well as a list of “Selected Readings” to guide interested students to many of the standard references in a particular area of study. Each chapter then ends with “Web Links,” listing websites that can provide more detailed information about particular issues.

Supplements for the Book

There are several learning and teaching aids that accompany the seventh edition of *Labor Economics*. These resources are available to instructors for quick download and convenient access via the Instructor Resource material available through McGraw-Hill Connect®.

A *Solutions Manual* and *Test Bank* have been prepared by Robert Lemke of Lake Forest College. The Solutions Manual provides detailed answers to all of the end-of-chapter problems. The comprehensive Test Bank offers over 350 multiple-choice questions in Word and electronic format. Test questions have now been categorized by AACSB learning categories, Bloom’s Taxonomy, level of difficulty, and the topic to which they relate.

The computerized Test Bank is available through *McGraw-Hill's EZ Test Online*, a flexible and easy-to-use electronic testing program. It accommodates a wide range of question types and you can add your own questions. Multiple versions of the test can be created and any test can be exported for use with course management systems such as Blackboard. The program is available for Windows and Macintosh environments. *PowerPoint Presentations* prepared by Michael Welker of Franciscan University of Steubenville, contain a detailed review of the important concepts presented in each chapter. The slides can be adapted and edited to fit the needs of your course. A *Digital Image Library* is also included, which houses all of the tables and figures featured in this book.

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Chapter 1

Introduction to Labor Economics

Observations always involve theory.

—*Edwin Hubble*

Most of us will allocate a substantial fraction of our time to the labor market. How we do in the labor market helps determine our wealth, the types of goods we can afford to consume, with whom we associate, where we vacation, which schools our children attend, and even the types of persons who find us attractive. As a result, we are all eager to learn how the labor market works. **Labor economics** studies how labor markets work.

Our interest in labor markets arises not only from our personal involvement but also because many social policy issues concern the labor market experiences of particular groups of workers or various aspects of the employment relationship between workers and firms. The policy issues examined by modern labor economics include

1. Why did the labor force participation of women rise steadily throughout the past century in many industrialized countries?
2. What is the impact of immigration on the wage and employment opportunities of native-born workers?
3. Do minimum wages increase the unemployment rate of less-skilled workers?
4. What is the impact of occupational safety and health regulations on employment and earnings?
5. Are government subsidies of investments in human capital an effective way to improve the economic well-being of disadvantaged workers?
6. Why did wage inequality in the United States rise so rapidly after 1980?
7. What is the impact of affirmative action programs on the earnings of women and minorities and on the number of women and minorities that firms hire?
8. What is the economic impact of unions, both on their members and on the rest of the economy?

9. Do generous unemployment insurance benefits lengthen the duration of spells of unemployment?
10. Why did the unemployment rate in the United States begin to approach the typically higher unemployment rate of European countries after 2008?

This diverse list of questions clearly illustrates why the study of labor markets is intrinsically more important and more interesting than the study of the market for butter (unless one happens to be in the butter business!). Labor economics helps us understand and address many of the social and economic problems facing modern societies.

1-1 An Economic Story of the Labor Market

This book tells the “story” of how labor markets work. Telling this story involves much more than simply recounting the history of labor law in the United States or in other countries and presenting reams of statistics summarizing conditions in the labor market. After all, good stories have themes, characters that come alive with vivid personalities, conflicts that have to be resolved, ground rules that limit the set of permissible actions, and events that result inevitably from the interaction among characters.

The story we will tell about the labor market has all of these features. Labor economists typically assign motives to the various “actors” in the labor market. We typically view workers, for instance, as trying to find the best possible job and assume that firms are trying to make money. Workers and firms, therefore, enter the labor market with different objectives—workers are trying to sell their labor at the highest price and firms are trying to buy labor at the lowest price.

The types of economic exchanges that can occur between workers and firms are limited by the set of ground rules that the government has imposed to regulate transactions in the labor market. Changes in these rules and regulations would obviously lead to different outcomes. For instance, a minimum wage law prohibits exchanges that pay less than a particular amount per hour worked; occupational safety regulations forbid firms from offering working conditions that are deemed too risky to the worker’s health. The deals that are eventually struck between workers and firms determine the types of jobs that are offered, the skills that workers acquire, the extent of labor turnover, the structure of unemployment, and the observed earnings distribution. The story thus provides a theory, a framework for understanding, analyzing, and predicting a wide array of labor market outcomes.

The underlying philosophy of the book is that modern economics provides a useful story of how the labor market works. The typical assumptions we make about the behavior of workers and firms, and about the ground rules under which the labor market participants make their transactions, suggest outcomes often corroborated by the facts observed in real-world labor markets. The study of labor economics, therefore, helps us understand and predict why some labor market outcomes are more likely to be observed than others.

Our discussion is guided by the belief that learning the story of how labor markets work is as important as knowing basic facts about the labor market. The study of facts without theory is just as empty as the study of theory without facts. Without understanding how labor markets work—that is, without having a theory of why workers and firms pursue some employment relationships and avoid others—we would be hard-pressed to predict the impact on the labor market of changes in government policies or changes in the demographic composition of the workforce.

A question often asked is which is more important—ideas or facts? The analysis presented throughout this book stresses that “ideas *about* facts” are most important. We do not study labor economics so that we can construct elegant mathematical theories of the labor market, or so that we can remember how the official unemployment rate is calculated and that the unemployment rate was 6.9 percent in 1993. Rather, we want to understand which economic and social factors generate a certain level of unemployment, and why.

The main objective of this book is to survey the field of labor economics with an emphasis on *both* theory and facts: where the theory helps us understand how the facts are generated and where the facts can help shape our thinking about the way labor markets work.

1-2 The Actors in the Labor Market

Throughout the book, we will see that there are three leading actors in the labor market: workers, firms, and the government.¹

As workers, we receive top casting in the story. Without us, after all, there is no “labor” in the labor market. We decide whether to work or not, how many hours to work, how much effort to allocate to the job, which skills to acquire, when to quit a job, which occupations to enter, and whether to join a labor union. Each of these decisions is motivated by the desire to *optimize*, to choose the best available option from the various choices. In our story, therefore, workers will always act in ways that maximize their well-being. Adding up the decisions of millions of workers generates the economy’s labor supply not only in terms of the number of persons who enter the labor market but also in terms of the quantity and quality of skills available to employers. As we will see many times throughout the book, persons who want to maximize their well-being tend to supply more time and more effort to those activities that have a higher payoff. The **labor supply curve**, therefore, is often upward sloping, as illustrated in Figure 1-1.

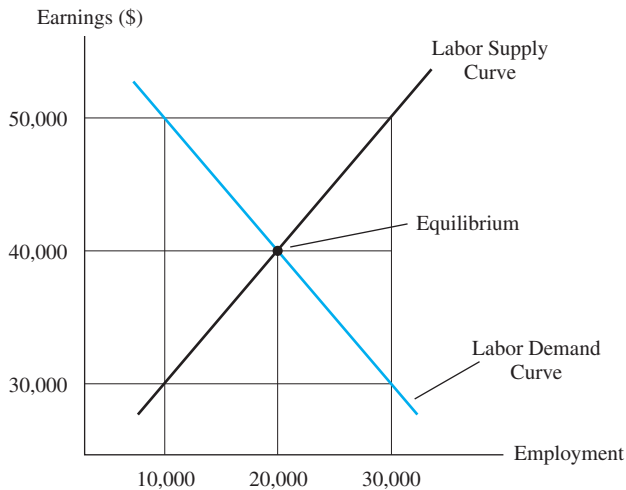
The hypothetical labor supply curve drawn in the figure gives the number of engineers that will be forthcoming at every wage. For example, 20,000 workers are willing to supply their services to engineering firms if the engineering wage is \$40,000 per year. If the engineering wage rises to \$50,000, then 30,000 workers will choose to be engineers. In other words, as the engineering wage rises, more persons will decide that the engineering profession is a worthwhile pursuit. More generally, the labor supply curve relates the number of person-hours supplied to the economy to the wage that is being offered. The higher the wage that is being offered, the larger the labor supplied.

Firms co-star in our story. Each firm must decide how many and which types of workers to hire and fire, the length of the workweek, how much capital to employ, and whether to offer a safe or risky working environment to its workers. Like workers, firms in our story also have motives. In particular, we will assume that firms want to maximize profits. From the firm’s point of view, the consumer is king. The firm will maximize its profits by making the production decisions—and hence the hiring and firing decisions—that best

¹ In some countries, a fourth actor can be added to the story: trade unions. Unions may organize a large fraction of the workforce and represent the interests of workers in their bargaining with employers as well as influence political outcomes. In the United States, however, the trade union movement has been in decline for several decades. By 2010, only 6.9 percent of private-sector workers were union members.

FIGURE 1-1 Supply and Demand in the Engineering Labor Market

The labor supply curve gives the number of persons who are willing to supply their services to engineering firms at a given wage. The labor demand curve gives the number of engineers that the firms will hire at that wage. Labor market equilibrium occurs where supply equals demand. In equilibrium, 20,000 engineers are hired at a wage of \$40,000.



serve the consumers' needs. In effect, the firm's demand for labor is a **derived demand**, a demand derived from the desires of consumers.

Adding up the hiring and firing decisions of millions of employers generates the economy's labor demand. The assumption that firms want to maximize profits implies that firms will want to hire many workers when labor is cheap but will refrain from hiring when labor is expensive. The relation between the price of labor and how many workers firms are willing to hire is summarized by the downward-sloping **labor demand curve** (also illustrated in Figure 1-1). As drawn, the labor demand curve tells us that firms in the engineering industry want to hire 20,000 engineers when the wage is \$40,000 but will hire only 10,000 engineers if the wage rises to \$50,000.

Workers and firms, therefore, enter the labor market with conflicting interests. Many workers are willing to supply their services when the wage is high, but few firms are willing to hire them. Conversely, few workers are willing to supply their services when the wage is low, but many firms are looking for workers. As workers search for jobs and firms search for workers, these conflicting desires are "balanced out" and the labor market reaches an **equilibrium**. In a free-market economy, equilibrium is attained when supply equals demand.

As drawn in Figure 1-1, the equilibrium wage is \$40,000 and 20,000 engineers will be hired in the labor market. This wage–employment combination is an equilibrium because it balances out the conflicting desires of workers and firms. Suppose, for example, that the engineering wage were \$50,000—above equilibrium. Firms would then want to hire only 10,000 engineers, even though 30,000 engineers are looking for work. The excess number of job applicants would bid down the wage as they compete for the few jobs available. Suppose, instead, that the wage were \$30,000—below equilibrium. Because

engineers are cheap, firms want to hire 30,000 engineers, but only 10,000 engineers are willing to work at that wage. As firms compete for the few available engineers, they bid up the wage.

There is one last major player in the labor market, the government. The government can tax the worker's earnings, subsidize the training of engineers, impose a payroll tax on firms, demand that engineering firms hire two black engineers for each white one hired, enact legislation that makes some labor market transactions illegal (such as paying engineers less than \$50,000 annually), and increase the supply of engineers by encouraging their immigration from abroad. All these actions will change the equilibrium that will eventually be attained in the labor market. Government regulations, therefore, help set the ground rules that guide exchanges in the labor market.

The Trans-Alaska Oil Pipeline

In January 1968, oil was discovered in Prudhoe Bay in remote northern Alaska. The oil reserves were estimated to be greater than 10 billion barrels, making it the largest such discovery in North America.²

There was one problem with the discovery—the oil was located in a remote and frigid area of Alaska, far from where most consumers lived. To solve the daunting problem of transporting the oil to those consumers who wanted to buy it, the oil companies proposed building a 48-inch pipeline across the 789-mile stretch from northern Alaska to the southern (and ice-free) port of Valdez. At Valdez, the oil would be transferred to oil super-tankers. These huge ships would then deliver the oil to consumers in the United States and elsewhere.

The oil companies joined forces and formed the Alyeska Pipeline Project. The construction project began in the spring of 1974, after the U.S. Congress gave its approval in the wake of the 1973 oil embargo. Construction work continued for three years and the pipeline was completed in 1977. Alyeska employed about 25,000 workers during the summers of 1974 through 1977, and its subcontractors employed an additional 25,000 workers. Once the pipeline was built, Alyeska reduced its pipeline-related employment to a small maintenance crew.

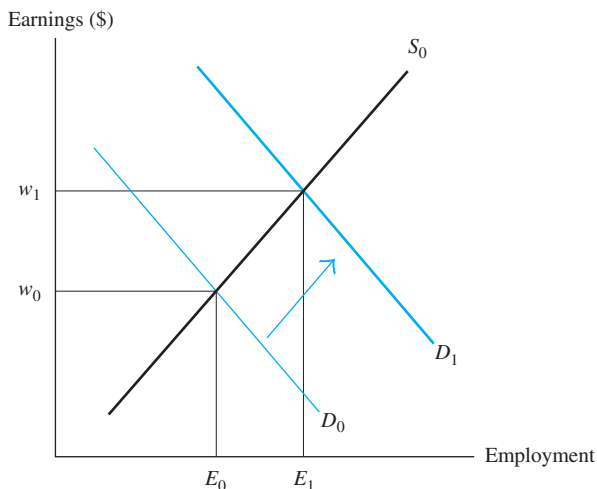
Many of the workers employed by Alyeska and its subcontractors were engineers who had built pipelines across the world. Very few of these engineers were resident Alaskans. The remainder of the Alyeska workforce consisted of low-skill labor such as truck drivers and excavators. Many of these low-skill workers were resident Alaskans.

The theoretical framework summarized by the supply and demand curves can help us understand the shifts in the labor market that *should* have occurred in Alaska as a result of the Trans-Alaska Pipeline System. As Figure 1-2 shows, the Alaskan labor market was initially in an equilibrium represented by the intersection of the demand curve D_0 and the supply curve S_0 . The labor demand curve tells us how many workers would be hired in the Alaskan labor market at a particular wage, and the labor supply curve tells us how many workers are willing to supply their services to the Alaskan labor market at a particular wage. A total of E_0 Alaskans were employed at a wage of w_0 in the initial equilibrium.

² This discussion is based on the work of William J. Carrington, "The Alaskan Labor Market during the Pipeline Era," *Journal of Political Economy* 104 (February 1996): 186–218.

FIGURE 1-2 The Alaskan Labor Market and the Construction of the Oil Pipeline

The construction of the oil pipeline shifted the labor demand curve in Alaska from D_0 to D_1 , resulting in higher wages and employment. Once the pipeline was completed, the demand curve reverted back to its original level and wages and employment fell.



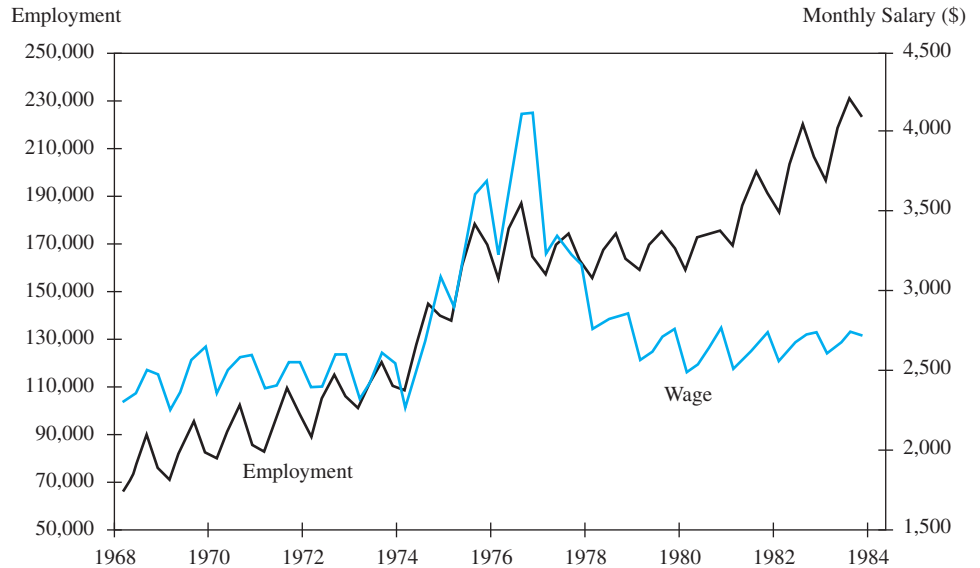
The construction project clearly led to a sizable increase in the demand for labor. Figure 1-2 illustrates this shift by showing the demand curve moving outward from D_0 to D_1 . The outward shift in the demand curve implies that—at any given wage—Alaskan employers were looking for more workers.

This theoretical framework immediately implies that the shift in demand moved the Alaskan labor market to a new equilibrium, one represented by the intersection of the new demand curve and the original supply curve. At this new equilibrium, a total of E_1 persons were employed at a wage of w_1 . The theory, therefore, predicts that the pipeline construction project would increase *both* employment and wages. As soon as the project was completed, however, and the temporary need for construction workers disappeared, the demand curve would have shifted back to its original position at D_0 . In the end, the wage would have gone back down to w_0 and E_0 workers would be employed. In short, the pipeline construction project should have led to a temporary increase in both wages and employment during the construction period.

Figure 1-3 illustrates what *actually* happened to employment and earnings in Alaska between 1968 and 1983. Because Alaska's population grew steadily for some decades, Alaskan employment also rose steadily even before the oil discovery in Prudhoe Bay. The data clearly show, however, that employment “spiked” in 1975, 1976, and 1977 and then went back to its long-run growth trend in 1977. The earnings of Alaskan workers also rose substantially during the relevant period. After adjusting for inflation, the monthly earnings of Alaskan workers rose from an average of \$2,648 in the third quarter of 1973 to \$4,140 in the third quarter of 1976, an increase of 56 percent. By 1979, the real earnings of Alaskan workers were back to the level observed prior to the beginning of the pipeline construction project.

FIGURE 1-3
Wages and
Employment
in the Alaskan
Labor Market,
1968–1984

Source: William J. Carrington, “The Alaskan Labor Market during the Pipeline Era,” *Journal of Political Economy* 104 (February 1996): 199.



It is worth noting that the temporary increase in earnings and employment occurred because the supply curve of labor is upward sloping, so that an outward shift in the demand curve moves the labor market to a point further up on the supply curve. As we noted earlier, an upward-sloping supply curve implies that more workers are willing to work when the wage is higher. It turns out that the increase in labor supply experienced in the Alaskan labor market occurred for two distinct reasons. First, a larger fraction of Alaskans were willing to work when the wage increased. In the summer of 1973, about 39 percent of Alaskans were working. In the summers of 1975 and 1976, about 50 percent of Alaskans were working. Second, the rate of population growth in Alaska accelerated between 1974 and 1976—because persons living in the lower 48 states moved to Alaska to take advantage of the improved economic opportunities offered by the Alaskan labor market (despite the frigid weather conditions there). The increase in the rate of population growth, however, was temporary. Population growth reverted back to its long-run trend soon after the pipeline construction project was completed.

1-3 Why Do We Need a Theory?

We have just told a simple story of how the Trans-Alaska Pipeline System affected the labor market outcomes experienced by workers in Alaska—and how each of the actors in our story played a major role. The government approved the pipeline project despite the potential environmental hazards involved; firms that saw income opportunities in building the pipeline increased their demand for labor; and workers responded to the change in demand by increasing the quantity of labor supplied to the Alaskan labor market. We have, in effect, constructed a simple theory or **model** of the Alaskan labor market. Our model is

characterized by an upward-sloping labor supply curve, a downward-sloping labor demand curve, and the assumption that an equilibrium is eventually attained that resolves the conflicts between workers and firms. As we have just seen, this model predicts that the construction of the oil pipeline would temporarily increase wages and employment in the Alaskan labor market. Moreover, this prediction is testable—that is, the predictions about wages and employment can be compared with what actually happened to wages and employment. It turns out that the supply–demand model passes the test; the data are consistent with the theoretical predictions.

Needless to say, the model of the labor market illustrated in Figure 1-2 does not do full justice to the complexities of the Alaskan labor market. It is easy to come up with many factors and variables that our simple model ignored and that could potentially influence the success of our predictions. For instance, it is possible that workers care about more than just the wage when they make labor supply decisions. The opportunity to participate in such a challenging or cutting-edge project as the construction of the Trans-Alaska Pipeline could have attracted engineers at wages lower than those offered by firms engaged in more mundane projects—despite the harsh working conditions in the field. The theoretical prediction that the construction of the pipeline project would increase wages would then be incorrect because the project could have attracted more workers at lower wages.

If the factors that we have omitted from our theory play a crucial role in understanding how the Alaskan labor market operates, we might be wrongly predicting that wages and employment would rise. If these factors are only minor details, our model captures the essence of what goes on in the Alaskan labor market and our prediction would be valid.

We could try to build a more complex model of the Alaskan labor market, a model that incorporates every single one of these omitted factors. Now that would be a tough job! A completely realistic model would have to describe how millions of workers and firms interact and how these interactions work themselves through the labor market. Even if we knew how to accomplish such a difficult task, this “everything-but-the-kitchen-sink” approach would defeat the whole purpose of having a theory. A theory that mirrored the real-world labor market in Alaska down to the most minute detail might indeed be able to explain all the facts, but it would be as complex as reality itself, cumbersome and incoherent, and thus would not at all help us understand how the Alaskan labor market works.

There has been a long debate over whether a theory should be judged by the realism of its assumptions or by the extent to which it finally helps us understand and predict the labor market phenomena we are interested in. We obviously have a better shot at predicting labor market outcomes if we use more realistic assumptions. At the same time, however, a theory that mirrors the world too closely is too clumsy and does not isolate what *really* matters. The “art” of labor economics lies in choosing which details are essential to the story and which details are not. There is a trade-off between realism and simplicity, and good economics hits the mark just right.

As we will see throughout this book, the supply–demand framework illustrated in Figure 1-1 often isolates the key factors that motivate the various actors in the labor market. The model provides a useful way of organizing our thoughts about how the labor market works. The model also gives a solid foundation for building more complex and more realistic

models of the labor market. And, most important, the model works. Its predictions are often consistent with what is observed in the real world.

The supply–demand framework predicts that the construction of the Alaska oil pipeline would have temporarily increased employment and wages in the Alaskan labor market. This prediction is an example of **positive economics**. Positive economics addresses the relatively narrow “What is?” questions, such as, What is the impact of the discovery of oil in Prudhoe Bay, and the subsequent construction of the oil pipeline, on the Alaskan labor market? Positive economics, therefore, addresses questions that can, in principle, be answered with the tools of economics, without interjecting any value judgment as to whether the particular outcome is desirable or harmful. Much of this book is devoted to the analysis of such positive questions as, What is the impact of the minimum wage on unemployment? What is the impact of immigration on the earnings of native-born workers? What is the impact of a tuition assistance program on college enrollment rates? What is the impact of unemployment insurance on the duration of a spell of unemployment?

These positive questions, however, beg a number of important issues. In fact, some would say that these positive questions beg *the* most important issues: *Should* the oil pipeline have been built? *Should* there be a minimum wage? *Should* the government subsidize college tuition? *Should* the United States accept more immigrants? *Should* the unemployment insurance system be less generous?

These broader questions fall in the realm of **normative economics**, which addresses much broader “What should be?” questions. By their nature, the answers to these normative questions require value judgments. Because each of us probably has different values, our answers to these normative questions may differ *regardless* of what the theory or the facts tell us about the economic impact of the oil pipeline, the disemployment effects of the minimum wage, or the impact of immigration on the economic well-being of native workers.

Normative questions force us to make value judgments about the type of society we wish to live in. Consider, for instance, the impact of immigration on a particular host country. As we will see in subsequent chapters, the supply–demand framework implies that an increase in the number of immigrants lowers the income of competing workers but raises the income of the firms that hire the immigrants by even more. On net, therefore, the receiving country gains. Moreover, because (in most cases) immigration is a voluntary supply decision, it also makes the immigrants better off.

Suppose, in fact, that the evidence for a particular host country was completely consistent with the model’s predictions. In particular, the immigration of 10 million workers improved the well-being of the immigrants (relative to their well-being in the source countries); reduced the income of native workers by, say, \$25 billion annually; and increased the incomes of capitalists by \$40 billion. Let’s now ask a normative question: *Should* the host country admit 10 million more immigrants?

This normative question cannot be answered solely on the basis of the theory or the facts. Even though total income in the host country has increased by \$15 billion, there also has been a redistribution of wealth. Some persons are worse off and others are better off. To answer the question of whether the country should continue to admit immigrants, one has to decide whose economic welfare the country should care most about: that of immigrants, who are made better off by immigration; that of native workers, who are made worse off;