Worker Mobility: Migration, Immigration, and Turnover

Worker mobility plays a critical role in market economies. Because the job of any market is to promote voluntary exchange, society relies on the free movement of workers among employers to allocate labor in a way that achieves maximum satisfaction for both workers and consumers. The flow (either actual or threatened) of workers from lower-paying to higher-paying jobs, for example, is what forces firms that are paying below-equilibrium wages to increase their wage offers. The existence of compensating wage differentials, to take another example, also depends on the ability of informed workers to exercise choice among employment opportunities in the search for enhanced utility.

Mobility, however, is costly. Workers must take time to seek out information on wage offers and conditions of work elsewhere, and for many workers, job search is most efficient if they quit their current job first (this is especially the case if a new job is being sought in another geographic area). Severing ties with the current employer means leaving friends and familiar surroundings and may mean giving up valuable employer benefits, such as pensions and health insurance, or the "inside track" on future promotions. Once a new job is found, workers may well face monetary and will almost certainly face psychic costs of moving to new surroundings. In short, workers who move to new employers bear costs in the near term so that utility can be enhanced later on. Therefore, the human capital model introduced in chapter 5 can be used to analyze mobility investments by workers.

The basic model that is briefly summarized in the next section is one of "voluntary" mobility undertaken by workers who perceive it to be in their self-interest. The factors underlying employer-initiated mobility—layoffs, for example—are different
and discussed elsewhere in this text (chapters 5 and 15). The implications of human capital theory for geographic migration are then analyzed, followed by an application of economic theory to the important topic of immigration policy. We conclude this chapter with a general analysis of employer turnover and its role in matching individual workers with jobs that make the most of their skills. We also analyze how mobility costs might lead to monopsonistic behavior by employers even in labor markets in which they are not the sole purchasers of labor services. This concluding section provides some linkage between the relatively simple theory of demand and supply that has been emphasized to this point in the text and the more complex models of worker and firm behavior that are analyzed in succeeding chapters.

THE DETERMINANTS OF WORKER MOBILITY

The human capital model presented in chapter 9 can be used to understand and predict worker-initiated mobility. This model views voluntary mobility as an investment in which costs are borne in some early period in order to obtain returns over a longer period of time. If the present value of the benefits associated with mobility exceeds the costs, both monetary and psychic, we assume that people will decide to change jobs or move, or both. If the discounted stream of benefits is not as large as the costs, then people will decide against such a change.

What determines the present value of the net benefits of mobility—that is, the benefits minus the costs—determines the mobility decision. These factors can be better identified by writing out the formula one would use if one were to precisely calculate these net benefits:

\[ \text{Present Value of Net Benefits} = \sum_{t=1}^{T} \frac{B_i - B_o}{(1 + r)^t} - C \]  

(10.1)

where:

- \( B_i \) = the utility derived from the new job (i) in the year t;
- \( B_o \) = the utility derived from the old job (o) in the year t;
- \( T \) = the length of time (in years) one expects to work at job i;
- \( r \) = the rate of discount;
- \( C \) = the utility lost in the move itself (direct and psychic costs);
- \( \Sigma \) = a summation—in this case the summation of the yearly discounted net benefits over a period running from year 1 to year T.

Clearly, the present value of the net benefits of mobility will be larger the greater is the utility derived from the new job, the less happy one is in the job of origin, the
### TABLE 10.1

<table>
<thead>
<tr>
<th>Country</th>
<th>Immigrants as a Percentage of Population</th>
<th>Immigrants as a Percentage of Labor Force</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>22.7</td>
<td>24.8</td>
</tr>
<tr>
<td>Canada</td>
<td>15.6</td>
<td>18.5</td>
</tr>
<tr>
<td>France</td>
<td>6.3</td>
<td>6.2</td>
</tr>
<tr>
<td>Germany</td>
<td>8.5</td>
<td>8.8</td>
</tr>
<tr>
<td>Italy</td>
<td>1.7</td>
<td>no</td>
</tr>
<tr>
<td>Japan</td>
<td>1.1</td>
<td>na</td>
</tr>
<tr>
<td>Sweden</td>
<td>5.8</td>
<td>5.1</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>3.5</td>
<td>3.6</td>
</tr>
<tr>
<td>United States</td>
<td>7.9</td>
<td>9.3</td>
</tr>
</tbody>
</table>

no = data not available


smaller are the immediate costs associated with the change, and the longer one expects to be in the new job or live in the new area (that is, the greater T is). These observations lead to some clear-cut predictions about which groups in society will be most mobile and about the patterns of mobility one would expect to observe. These predictions are analyzed in the following sections on migration and quit behavior.

**GEOGRAPHIC MOBILITY**

Mobility of workers among countries, and among regions within a country, is an important fact of economic life. Roughly 100 million people in the world live in a country different from the one in which they were born, and Table 10.1 indicates that for the world’s larger economies, immigrants typically constitute from 5 to 20 percent of the labor force. One study indicated that of the 5 million people who migrated to another country from 1975 to 1980, two-thirds went to the United States, Canada, or Australia.7

Within the United States during a recent one-year period (1996–1997), over 3 million workers—2.5 percent of all those employed—moved between states, and almost half of those moved to a different region (the South experienced the largest net inflow, while the Midwest had the largest net outflow).8 When asked about their reasons for moving, 70 to 85 percent of workers cite economic reasons. Roughly one-third of those moving among states stay with their current employers, but taking account

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of those whose move is motivated by economic factors and who change employers, about half of all interstate moves are precipitated by a change in employment. This emphasis on job change suggests that human capital theory can help us understand which workers are most likely to undertake investments in geographic mobility and the directions in which mobility flows will take place.

In the subsections that follow, we analyze migration in terms of the direction (and distance) of the flows, the characteristics of the migrants, and the returns to investments in migration. Many of the empirical studies of these topics use data on internal migration within the United States, but international migration is also analyzed.

The Direction of Migratory Flows

Human capital theory predicts that migration will flow from areas of relatively poor earnings possibilities to places where opportunities are better. Whether one observes the flow of immigration to the United States from Mexico, for example, or the internal flows from the South to the North in the 1950s, it is clear that migratory flows generally support this prediction. The prediction, however, can also be tested by looking at the characteristics of more specific areas from which and to which people move. In general, the results of such studies suggest that the "pull" of good opportunities in the areas of destination are stronger than the "push" of poor opportunities in the areas of origin. In other words, while people are more attracted to places where earnings are expected to be better, they do not necessarily come from areas where opportunities are poorest.

The most consistent finding in these detailed studies is that people are attracted to areas where the real earnings of full-time workers are highest. One might also expect that the chances for obtaining work in a new area would also affect that area's attractiveness. One way to measure job availability in an area is to use the unemployment rate, but the studies find no consistent relationship between unemployment and in-migration, perhaps because the number of people moving with a job already in hand is three times as large as the number moving to look for work.\(^2\) If one already has a job in a particular field, the area's unemployment rate is irrelevant.

Most studies have found that, contrary to what one might expect, the characteristics of the place of origin do not appear to have much net influence on migration. One reason for this finding is that while those in the poorest places have the greatest incentives to move, the very poorest areas also tend to have people with lower levels of wealth, education, and skills—the very people who seem least willing (or able) to move. To understand this phenomenon, we must turn from the issue


of who people go to a discussion of who is most likely to move. In addition, there is the issue of who people move. See Example 10.1, which pulls together the issues of who, where, and when in analyzing one of the most momentous internal migrations in the history of the United States—the "Great Migration" of blacks from the South to the North in the first half of the twentieth century.

Personal Characteristics of Movers

Migration is highly selective, in the sense that it is not an activity in which all people are equally likely to be engaged. To be specific, mobility is much higher among the young and the better-educated, as human capital theory would suggest.

Age

Age is the single most important factor in determining who migrates. The peak years for mobility are the ages 20-24. 12 percent of this age group migrates across county or state lines each year. By age 32 the rate of migration is roughly 8 percent, and by age 47 it is only 4 percent.

There are two explanations for the fact that migration is an activity primarily for the young. First, the younger one is, the greater the potential returns from any human capital investment. As noted earlier, the longer the period over which benefits from an investment can be obtained, the larger the present value of these benefits.

Second, a large part of the costs of migration are psychic, the losses associated with giving up friends, community ties, and the benefits of knowing one's way around. When one is starting out as an adult, these losses are comparatively small because one is not well established in the adult world. However, as one grows older, community ties become stronger and the losses associated with leaving them larger, thus inhibiting mobility. This loss of reasoning is underscored by the fact that, within age groups, unmarried people are more likely to migrate between states than married ones, and married people without children are more mobile than those with children.8

Education

While age is probably the best predictor of who will move, education is the single best indicator of who will move within an age group. As can be seen from Table 10.2, which presents U.S. migration rates for people ages 30-34, more education does make one more likely to move (especially between states).

One cost of migration is that of ascertaining where opportunities are and how good they are likely to be. If one's occupation has a national labor market, it is the case for many college graduates, it is relatively easy to find out about opportunities in distant places. Jobs are advertised in national newspapers. Recruiters from all over visit college campuses. Employment agencies make nationwide searches. In cases such as these, people usually move with a job already in hand.


EXAMPLE

The Great M

Our model explains that of migration most American blacks making migrants were extremely dang black people out of the South in the 1870s. O blacks were resi World War I, in hough, and even of the South in the 1920s. Black migrants were not as numerous as white migrants. In the 1930s, the African American population in the South was estimated at 15 million. However, this number has dropped significantly in recent years due to increased migration to the North and West.
EXAMPLE 10.1

The Great Migration: Southern Blacks Move North

Our model predicts that workers will move whenever the present value of the net benefits of migration is positive. Before the Civil War, most American blacks were enslaved, a condition making migration from the South to the North extremely dangerous and costly. Despite the enormous potential benefits few tried to "migrate." After the Civil War and emancipation, a huge wage gap opened up between the South and the North, with northern wages often twice as high as those in the South. Yet black migration out of the South was very low—only 68,000 during the 1870s. Only 4.9 percent of southern-born blacks were residing elsewhere in 1910. During World War I, however, the "Great Migration" began, and over half a million blacks moved out of the South in the 1910s. Black migration during the 1920s was almost twice this high, and it exceeded 1.5 million during the 1940s, so that by 1950 over 20 percent of southern-born blacks had left the region.

Why did this migration take so long to get going? One important factor blocking it was low education levels, which made obtaining information about outside opportunities very difficult. In 1880 more than 75 percent of African Americans over age ten were illiterate, but this figure fell to about 20 percent by 1930. Increasingly, blacks could access economic information in letters and newspapers sent home from migrants to the North. One study finds that in 1900 more than 30 percent of black males were three times more likely to have migrated than those who were illiterate. In 1940, blacks who had attended high school were twice as likely to have migrated than those with zero to four years of schooling. However, rising literacy alone cannot explain the sudden burst of migration.

The outbreak of World War I seems to have triggered the migration in two ways. First, it caused labor demand in northern industry to soar. Second, it brought the collapse of immigration inflows from abroad. Before World War I, growing northern industries had relied heavily on immigrants from Europe as a source of labor. Industrial employers offered fewer well-paying jobs to blacks—probably because their employees reacted with disruptive hostility when black workers were hired. With the immigration flood slowing to a trickle, however, employers had no other alternative and began to hire black workers—even sending agents to recruit in the South. Job opportunities for blacks in the North finally opened up and many responded by moving.

A study using census data from 1870 to 1950 finds that, as expected, northern states in which wages were highest attracted more black migrants, as did those in which manufacturing growth was more rapid. Higher European immigration seemed to have deterred black migration. The immigration of an additional 100,000 foreign-born over the course of a decade is associated with an influx of 8,400 fewer black migrants. The implication is that if European immigration had been completely restricted at the turn of the century, the Great Migration would probably have started much sooner, with roughly 300,000 blacks moving north between 1900 and 1910—twice the actual rate.

TABLE 10.3
U.S. Migration Rates for People Aged 20-34, by Educational Level, 1996-1997, (in percentages)

<table>
<thead>
<tr>
<th>Educational Level (in Years)</th>
<th>Moving between Countries within States</th>
<th>Moving between States</th>
</tr>
</thead>
<tbody>
<tr>
<td>9-11</td>
<td>3.3</td>
<td>2.9</td>
</tr>
<tr>
<td>12</td>
<td>4.4</td>
<td>3.0</td>
</tr>
<tr>
<td>13-15</td>
<td>2.9</td>
<td>3.0</td>
</tr>
<tr>
<td>16</td>
<td>5.1</td>
<td>4.3</td>
</tr>
<tr>
<td>17 or more</td>
<td>4.7</td>
<td>5.4</td>
</tr>
</tbody>
</table>


However, if the relevant labor market for one’s job is localized, it is difficult to find opportunities elsewhere that might be better. For a junior in Beaumont, Texas, finding out about employment opportunities in the north-central region is like looking for a proverbial needle in a haystack. That such moves occur at all, let alone in reasonably large numbers, is testimony to the fact that people are able to acquire information despite the obstacles.

The Role of Distance

Human capital theory clearly predicts that as migration costs rise, the flow of migrants will fall. The costs of moving increase with distance for two reasons. First, as noted above, for people in local labor markets, acquiring information on opportunities elsewhere can be very difficult (costly). Surely it is easier to find out about employment prospects closer to home than farther away, newspapers are easier to obtain, phone calls are cheaper, friends and relatives are more useful contacts, and knowledge of employers is greater. Second, the money costs of transportation for the move and for trips back to see friends and relatives, and hence the psychic costs of the move, obviously rise with distance. Thus, one would clearly expect to find that people are more likely to move short distances than long distances.

In general, this expectation is borne out by the statistics. Of the 21 million employed Americans who changed their place of residence during the March 1996-March 1997 period, 65.7 percent moved to a different house in the same county, 19.8 percent moved to a different county in the same state, 7.4 percent changed states within the same region, and 7.1 percent moved to a state in a different region. Clearly, the propensity to move far away is smaller than the propensity to stay close to home.

Related to the desire to minimize psychic and informational costs is the fact that people tend to migrate to areas where friends or relatives have previously migrated.

This chain migration is especially evident in the stream of migration from Puerto Rico to the mainland: most Puerto Ricans go to Chicago and to the tristate area of New York–New Jersey–Connecticut.

Interestingly, lack of education appears to be a bigger deterrent to long-distance migration than does age (other influences held constant), a fact that can shed some light on whether information costs or psychic costs are the primary deterrent. As suggested by our arguments in the previous subsection, the age deterrent is closely related to psychic costs, while educational level and ease of access to information are closely linked. The apparently larger deterrent of educational level suggests that information costs have more influence on the relationship between migration and distance.1

Skills, the Earnings Distribution, and International Migration

To this point, our examples of factors that influence geographic mobility have related to domestic migration—movements within the United States. The influences of age, access to information, the potential gains in earnings, and distance are all relevant to international migration as well, although the international migration actually observed is often so highly regulated that not all people who want to change their country of residence can do so. One aspect of the potential gains from migration that is especially important when analyzing international flows of labor is the distribution of earnings in the sending as compared with the receiving country. The relative distribution of earnings can help us predict which skill groups within a sending country are most likely to emigrate.

Some countries have a more compressed (equal) earnings distribution than is found in the United States. In these countries, the average earnings differential between skilled and unskilled workers is smaller, implying that the returns to human capital investments are lower than in the United States. Skilled and professional workers from these countries (northern European countries are most notable in this regard) have a much greater incentive to emigrate to the United States. Unskilled workers in countries with more equality of earnings are well paid compared to unskilled workers here and thus have less incentive to move, so immigrants from these countries are positively selected with respect to skills (that is, they are more skilled than the average worker who remains in the country of origin).

In countries with less equal distributions of earnings than are found in the United States, skilled workers do relatively well, but there are large potential gains to the unskilled from emigrating to the United States. These unskilled workers may be blocked from making human capital investments within their own countries (and thus from taking advantage of the high returns to such investments that are implied by the large earnings differentials). Instead, their human capital investment may take the form of emigrating and seeking work in the United States. Less-developed

countries tend to have relatively unequal earnings distributions, so it is to be expected that immigrants from these countries (and especially Mexico, which is closest) will be negatively selected with regard to skills. That is, immigrants to the United States from countries with less equal earnings distributions will be disproportionately unskilled.8

The Individual Returns to International and Domestic Migration

The previous sections discussed the fact that the people most likely to move are the ones with the most to gain and the least to lose by migration, and that they move to areas where their net gains are likely to be large. Another way to test our human capital theory of migration is to see if the earnings of individual immigrants are higher than they would have been without migration. One way to proceed with calculations of these "returns" to migration is to calculate the differences in earnings received by migrants and the earnings received by workers of comparable age and education in the areas from which the immigrants came.

While the available studies of internal migration in the United States are somewhat old, they support the prediction that migrants earn more than they would have earned if they had not moved. One study of families that moved across state lines in 1971–1972, for example, found that increases in the present value of earnings over the four-year period just after the move averaged $4,254 for husbands. This increase can be compared to an average increase of $1,648 for nonmoving husbands.9

Interestingly, while the family incomes of those who moved in 1971–1972 rose more than the incomes of those who did not, the wives in families experiencing moves did move poorly in terms of increased earnings than did wives in nonmoving families! The reason for this disparity is no doubt found in the way that the family migration decisions were made. Family income was apparently a major concern among movers, and because the husband was typically the dominant earner at that time, his earnings opportunities probably were given primary weight in the decision about whether (and where) to move. The husband was thus free to move where his earnings potential was best, and it would only be by coincidence that this same place would be optimal (in terms of earnings) for his wife. With more women now permanently attached to the labor force, however, and with women's wages now rising relative to men's (see chapters 12 and 14), it would be interesting to know

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8For a more thorough discussion of this issue, see George J. Borjas, Friends or Strangers (New York: Basic Books, 1990), especially chapters 1 and 7.

<table>
<thead>
<tr>
<th>TABLE 10.3</th>
<th>Ratio of Wages, Immigrant to Native-Born Men, 1970–1990</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Comparison with All Native-Born Men, Age 25–64</strong></td>
<td></td>
</tr>
<tr>
<td>Immigrants Arriving in</td>
<td>1970</td>
</tr>
<tr>
<td>1965–1969</td>
<td>0.874</td>
</tr>
<tr>
<td>1975–1979</td>
<td>—</td>
</tr>
<tr>
<td>1985–1989</td>
<td>—</td>
</tr>
<tr>
<td><strong>B. Comparison with Ethnically Similar Native, Age 25–34 in Years Shown: Asians</strong></td>
<td></td>
</tr>
<tr>
<td>1965–1966</td>
<td>0.824</td>
</tr>
<tr>
<td>1975–1979</td>
<td>—</td>
</tr>
<tr>
<td>1985–1989</td>
<td>—</td>
</tr>
<tr>
<td><strong>C. Comparison with Ethnically Similar Native, Age 25–34 in Years Shown: Mexicans</strong></td>
<td></td>
</tr>
<tr>
<td>1965–1969</td>
<td>0.735</td>
</tr>
<tr>
<td>1975–1979</td>
<td>—</td>
</tr>
<tr>
<td>1985–1989</td>
<td>—</td>
</tr>
</tbody>
</table>

*Source: George Borjas, "The Economics of Immigration," *Journal of Economic Literature* 32, no. 4 (December 1994), Table 5.7.*

whether decisions about family migration are now made differently than they were in 1971–1972.

Comparing the earnings of international immigrants with what they would have earned had they not emigrated is generally not feasible, owing to a lack of data on earnings in the home country.56 Thus, studies of the returns to immigration have focused on comparisons with native-born workers in the "host" country. Most of the published research has been done on the United States, and Table 10.3 contains data from different time periods on the wages, relative to those for native-born Americans, of three cohorts of male immigrants: those who came in the late 1960s, the late 1970s, and late 1980s.

One can observe three phenomena from Table 10.3. First, as can be seen from looking at the ratios printed in boldface type, immigrants earn substantially less than natives (including those who are ethnically similar) when they first arrive. Second, if one looks along the rows for the 1965–1969 and 1975–1979 cohorts, it is clear that relative wages increase from their initially low levels, which means that wages of immigrants rise faster than those of natives during at least the immigrants' first

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56 Barry R. Chiswick, *Legal Alibis: Their Employment and Employers* (Kalamazoo, Mich.: N.E. Uppala Institute for Employment Research, 1981), mentions two studies that compared the earnings of legal immigrants with the conditions under which they lived before they left. In one study, it was found that legal immigrants, as assessed by the availability of running water and electricity, rose substantially. The other study reported that the earnings of Mexican apple harvesters in Oregon, even after deducting the costs of migration, were triple what they would have been in Mexico.
decade in this country. Increases in the second decade are generally smaller and less certain to be above those for natives. Third, from comparing the initial (hold-
tage) rates across the three cohorts, it is evident that each cohort of immigrants has done less well at entry than its predecessor.

The first phenomenon, that immigrants initially earn substantially less than natives, is hardly surprising. Even after controlling for the effects of age and edu-
cation (the typical immigrant is younger and less educated than the typical native), immigrants earn less owing to their difficulties with English, their unfamiliarity with American employment opportunities, and their lack of an American work his-
tory (and employers' consequent uncertainties about their productivity).

The second phenomenon, that earnings of immigrants rise relatively quickly, no doubt reflects their high rates of investment in human capital after arrival. After
immigration, immigrants typically invest in themselves by acquiring work experi-
ence and improving proficiency in English, and these investments raise the wages
they can command. These human capital investments, like others analyzed in this
and the preceding chapter, are made with an eye on the expected net returns. For
example, a recent study found that English fluency raises immigrant earnings by
an average of 17 percent in the United States, 12 percent in Canada, and 9 percent
in Australia; however, not all immigrants have the same incentives to become
proficient in English. Those who live in "enclaves," where business is conducted in
one's native tongue, those who expect to return to their homeland, and those
who immigrated for other than economic reasons are less likely to invest time and
money in learning English.12 See Example 10.2 for a further analysis of immigrants' incentives to invest in human capital.

Third, it appears that the immigrants of recent years have been increasingly less
skilled than their predecessors. The overall wage ratio at entry has fallen from 0.934
in the late 1960s to 0.683 in the late 1980s, and careful analyses of this decline indi-
cate that more recent immigrants have come with relatively less human capital. For
example, in 1970, immigrants were 22 percent more likely than natives to be high
school dropouts, but they are now almost 150 percent more likely to be dropouts.
It has been estimated that the changing mix of national origin among immigrants
to the United States, with increased proportions coming from countries with rela-
tively low average levels of educational attainment, accounts for almost all of this
decline in the human capital of immigrants.13

One consequence of the decline in skill levels among immigrants is that, while
at least some of those who immigrated in the late 1960s achieved wage par-
ty with natives two decades later, it is unlikely that many recent immigrant groups
will do so. For example, while Asians who immigrated in the late 1960s had wages
that were 9 percent higher than those of Asian Americans a decade after a decision in the United

12Barry R. Chiswick and Paul W. Miller, "The Endogeneity between Language and Earnings: Interna-
13George Borjas, "The Economics of Immigration," Journal of Economic Literature 32, no. 4 (December
EXAMPLE 10.2

"Economic" vs. "Political" Immigrants

Individuals who immigrate to a country like the United States presumably do so because they believe they will be improving their well-being. For some the decision is motivated primarily by economic considerations, and the timing of the move is both voluntary and planned. These individuals may be referred to as "economic" migrants. Others, however, may be forced to flee their country because of political upheavals, and for these individuals the decision is likely to be less motivated by economic factors, not planned as far in advance, and somewhat less voluntary (given the life-threatening prospects they may face). The latter may be referred to as "political" migrants.

What differences might we expect in the economic success of the two groups when they arrive in the United States? On the one hand, since the economic migrants' decisions were motivated by expectations of improved economic welfare, one might expect that they would initially earn more than the political migrants, who were less prepared for the move. On the other hand, members of the latter group do not have the option of ultimately returning to their homelands as the economic migrants do. Because return migration is precluded for political migrants, they have stronger incentives than economic migrants to make human capital investments that have payoffs only in the United States (economic migrants may want to preserve skills that will be useful to them if they return to their homelands). In addition, political migrants often leave all their physical or financial assets behind when they flee their homelands; as a result, they may prefer to concentrate a greater share of their subsequent investments in human (rather than physical) capital. For both reasons, one might expect political migrants to have steeper earnings profiles—more rapid earnings growth with years in the United States—than economic migrants.

In a carefully conducted study, George Borjas found substantial evidence to support these expectations. Other factors (such as age and education) held constant, Cuban male immigrants to the United States, many of whom fled their homeland after Fidel Castro came to power, appear to have lower earnings than other Hispanic male immigrants (primarily Mexicans and Puerto Ricans) in the early years after both groups arrive in the United States; however, in subsequent years they exhibit more rapid rates of earnings growth.


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States, their counterparts who immigrated in the late 1970s had wages 10 percent lower than those of Asian-Americans after a decade. Similarly, one study has estimated that Latin Americans who immigrated before 1975 could expect lifetime earnings only 12 percent below those of the average native (including non-Latinos); the most recent immigrants from Latin America can expect lifetime earnings some 27 percent lower.1

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Whether immigration is a good investment for immigrants, however, depends on the earnings they can attain in the host country relative to their country of origin. Thus, even if the typical Mexican immigrant can expect to earn only 75 percent of what is earned by the typical native-born American over a lifetime, the fact that the average resident of Mexico is able to consume only one-third as much as the typical resident of the United States implies that the migration investment still has a large monetary payoff.

Return Migration
Migrant, whether internal or international, is frequently accompanied by a later permanent return to the area of origin. Twenty percent of all moves are to an area in which the person had previously lived, and about half of these are back to one's birthplace. Thus, "return migration"—migrating back to a place from which one originated in some sense—is an important phenomenon of geographic mobility. There are two major reasons for return migration. First, much of the migration across international borders may well be by people who intend to stay in the foreign country for only a limited period of time. These people live frugally, send much of their earnings back to their homeland, and return when their objectives are met. Second, return migration may be a response by those who find either that job opportunities were not what they had expected or that the psychic costs of living without the social or economic "safety net" of friends and family were higher than they had anticipated. To say that, on average, migration is a good investment for those who decide to undertake it does not imply that it is a good investment for all. Clearly, most people do not migrate in any given year, presumably because they believe that, for them, it would not be a good investment. It is equally clear, however, that some migrants find out they have made a mistake. What they thought would be a good investment may turn out not to be. Interestingly, a recent study of return migration finds evidence consistent with the hypothesis that those most likely to return are those who were "closest to the margin" at the time they came (that is, they were the ones with the least to gain among those who decided to emigrate).18

POLICY APPLICATION: RESTRICTING IMMIGRATION
Nowhere are the analytical tools of the economist more important than in the area of immigration policy, the lives affected by immigration policy number in the millions each year. After a brief outline of the history of U.S. immigration policy, this


section will analyze in detail the consequences of illegal immigration, a phenomenon currently attracting widespread attention.

U.S. Immigration History

The United States is a rich country, a country whose wealth and high standard of living make it an attractive place for immigrants from nearly all parts of the world. For the first 140 years of its history as an independent country, the United States followed a policy of essentially unrestricted immigration (the only major immigration restrictions were placed on Asians and on convicts). The flow of immigrants was especially large after 1880, when U.S. industrialization and political and economic upheavals in Europe made immigration an attractive investment for millions. As one can see from Table 10.4, officially recorded immigration peaked in the first decade of the twentieth century, when the yearly flow of immigrants was more than 1 percent of the population.

In 1921, however, Congress adopted the Quota Law, which set annual quotas on immigration based on nationality. These quotas had the effect of reducing

<table>
<thead>
<tr>
<th>TABLE 10.4</th>
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</thead>
<tbody>
<tr>
<td>Officially Recorded Immigration: 1820 to 1996</td>
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</table>

<table>
<thead>
<tr>
<th>Period</th>
<th>Number (in thousands)</th>
<th>Annual Rate (per thousand of U.S. population)</th>
<th>Year</th>
<th>Number (in thousands)</th>
<th>Annual Rate (per thousand of U.S. population)</th>
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<tr>
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<td>152</td>
<td>1.2</td>
<td>1881</td>
<td>597</td>
<td>2.6</td>
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<td>1831–1840</td>
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<td>3.9</td>
<td>1882</td>
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<td>1,713</td>
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<td>1851–1860</td>
<td>2,598</td>
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<td>1884</td>
<td>544</td>
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<td>1861–1870</td>
<td>2,315</td>
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<td>1881–1890</td>
<td>5,247</td>
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<td>602</td>
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<tr>
<td>1891–1900</td>
<td>3,688</td>
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<td>1888</td>
<td>643</td>
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<td>1901–1910</td>
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<td>5.7</td>
<td>1890</td>
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<td>1921–1930</td>
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<td>1892</td>
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<td>1941–1950</td>
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<td>1893</td>
<td>904</td>
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<td>2,515</td>
<td>1.5</td>
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<td>1961–1970</td>
<td>3,322</td>
<td>1.7</td>
<td>1895</td>
<td>593</td>
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<td>1971–1980</td>
<td>4,389</td>
<td>2.0</td>
<td>1896</td>
<td>916</td>
<td>3.5</td>
</tr>
<tr>
<td>1981–1990</td>
<td>7,338</td>
<td>3.1</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>


immigration from eastern and southern Europe. This act was followed by other laws in 1924 and 1929 that further restricted immigration from southern and eastern Europe. These various revisions in immigration policy were motivated, in part, by widespread concern over the alleged adverse effect on native employment of the arrival of unskilled immigrants from eastern and southern Europe.

In 1965 the passage of the Immigration and Nationality Act abolished the quota system based on national origin that so heavily favored northern and western Europeans. Under this law, as amended in 1990, overall immigration is formally restricted to 675,000 people per year, with 480,000 spots reserved for family-reunification purposes, 140,000 reserved mostly for immigrants with exceptional skills who are coming for employment purposes, and 55,000 for "diversity" immigrants (from countries that have not recently provided many immigrants to the United States). Political refugees, who must meet certain criteria relating to persecution in their home countries, are admitted without numerical limit. While less overtly discriminatory than it once was, and while the cap seems to be somewhat flexible in practice (see immigration figures for 1995 and 1996 in Table 10.4), immigration law in the United States still imposes a ceiling on immigrants that is far below the numbers who wish to come. The fact that immigration to the United States is a very worthwhile investment for many more people than can legally come has created incentives for people to live in the country illegally.

Illegal immigration can be divided into two categories of roughly equal size: immigrants who enter legally but overstay or violate the provisions of their visas, and those who enter the country illegally. Over 20 million people enter the United States each year, usually as students or visitors, under nonimmigrant visas. Once here, the foreigner can look for work, although it is illegal to work at a job under a student's or visitor's visa. If the "student" or "visitor" is offered a job, he or she can apply for an "adjustment of status" to legally become a permanent resident, although the chances for approval as an employment-based immigrant are slim for the ordinary worker.

The other group of illegal immigrants enter the country without a visa. Immigrants from the Caribbean often enter through Puerto Rico, whose residents are U.S. citizens and thus are allowed free entry to the mainland. Others walk across the Mexican border. Still others are smuggled into the United States or use false documents to get through entry stations. For obvious reasons, it is difficult to establish the number of illegal immigrants who have come to the United States; however, the flow of illegals is believed to be 275,000 per year, and the total number residing in the United States in 1996 was estimated at 5 million.12

Despite the lack of precise knowledge about the dimensions of illegal immigration, the fact remains that by the 1980s it had become a very prominent policy issue. The Secretary of Labor estimated in late 1979 that if only half of the jobs held by illegal aliens were given to U.S. citizens, the unemployment rate would drop

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from 6 percent to 3.7 percent. Similar beliefs led Congress to pass the Immigration Reform and Control Act of 1986, which imposed penalties on employers who knowingly hire illegal aliens (previously, the penalty for illegal employment was depor-
tation, which clearly fell only on the illegally employed worker). The sanctions
against employers included fines that can range from $250 to $10,000 per illegal
worker, with penalties escalating throughout that range for repeated offenses. Jail
terms were prescribed for "pattern and practice" offenders. The reform act also
granted amnesty (and legal immigrant status) to all those who had been in the Unit-
ed States illegally since the end of 1981, and illegal aliens who had worked in agri-
culture for over 90 days per year were granted the right to apply for immigrant
status even if they came after 1981. All told, some 2.7 million people applied for
amnesty under the provisions of the act.

The policies people advocate are based on their beliefs about the consequences
of immigration for employers, consumers, taxpayers, and workers of various skill
levels and ethnicities. Nearly everyone with an opinion on this subject has an eco-
monic model implicitly or explicitly in mind when addressing these conse-
quences; the purpose of this section is to make those economic models explicit
and to evaluate them.

Naive Views of Immigration
There are two opposing views of illegal immigration that can be considered naive.
One view, which is widely held in the government, is that every illegal immigrant
deprives a citizen or legal alien of a job. For example, a Department of Labor offi-
cial told a House committee studying immigration, "I think it is logical to conclude
that if they are actually employed, they are taking a job away from one of our Amer-
ican citizens." 19 According to this view, if x illegal aliens are deported and others
kept out, the number of unemployed Americans would decline by x.

At the opposite end of the policy spectrum is the equally naive argument that
the illegals perform jobs no American citizen would do:

You couldn't conduct a hotel in New York, you couldn't conduct a restaurant in New
York . . . if you didn't have rough laborers. We haven't got the rough laborers any-
more. Where are we going to get the people to do that rough work? 20

Both arguments are simplistic because they ignore the slopes of the demand
and supply curves. Consider, for example, the labor market for the job of "rough
laborer"—any job most American citizens find distasteful. Without illegal immi-
grants, the restricted supply of Americans to this market would imply a relatively
high wage (W*, in Figure 10.1). N* citizens would be employed. If illegal aliens
entered the market, the supply curve would shift outward and perhaps flatten
(supposing that immigrants were more responsive to wage increases for rough

19Elliott Abrams and Franklin S. Abrams, "Immigration Policy—Who Gets In and Why?" Public Interest
20Ibid., 26.
laborers than citizens were). The influx of illegals would drive the wage down to $W_2$, but employment would increase to $N_2$.

Are Americans unwilling to do the work of rough laborers? Clearly, at the market wage of $W_1$, many more aliens are willing to work at the job than U.S. citizens are. Only $N_1$ citizens would want these jobs at this low wage, while the remaining supply ($N_1 - N_2$) is made up entirely of aliens. If there were no immigrants, however, $N_2$ Americans would be employed at wage $W_1$, as rough laborers. Wages would be higher, as would the prices of the goods or services produced with this labor, but the job would get done. The only "shortage" of American citizens is at the low wage of $W_1$; at $W_2$, there is no shortage (see chapter 2 for further discussion of labor shortages).

Would deporting those illegal aliens working as rough laborers create the same number of jobs for U.S. citizens? The answer is clearly no. If the $N_1 - N_2$ aliens working as laborers were deported and all other illegal aliens were kept from the market, the number of Americans employed as laborers would rise from $N_1$ to $N_1$ and their wages would rise from $W_1$ to $W_2$. (Figure 10.1). $N_1 - N_2$ jobs would be destroyed by the rising wage rate associated with deportation. Thus, while deportation would increase the employment and wage levels of Americans in the labor market, it would certainly not increase employment on a one-for-one basis.

There is, however, one condition in which deportation would create jobs for American citizens on a one-for-one basis: when the federal minimum wage law creates a surplus of labor. Suppose, for example, that the supply of American laborers is represented by $ABC$, in Figure 10.2 and the total supply is represented by $ACD$. Because an artificially high wage has created a surplus, only $N$ of the $N_1$ workers willing to work at the minimum wage can actually find employment. If some of them are illegal aliens, sending them back—coupled with successful efforts to

**FIGURE 10.1**
Demand and Supply of "Rough Laborers"

**FIGURE 10.2**
Demand and ! Laborers" with
deny other aliens access to these jobs—would create jobs for a comparable number of Americans. However, the demand curve would have to intersect the domestic supply curve (\( S_D \)) at or to the left of point \( B \) to prevent the wage level from rising (and thus destroying jobs) after deportation.

The analyses above ignore the possibility that if low-wage immigrant labor is prevented from coming to the jobs, employers may transfer the jobs to countries with abundant supplies of low-wage labor. If this were to occur, unskilled workers in this country would continue to feel downward pressure on their wages and employment opportunities even if illegal immigration were to cease. Thus, it may well be the case that unskilled American workers are in competition with foreign unskilled workers anyway, whether those workers are employed in the United States or elsewhere. However, not all unskilled jobs can be moved abroad, because not all outputs can be imported (most unskilled services, for example, must be performed at the place of consumption); therefore, the analyses that follow will continue to focus on situations in which the "export" of unskilled jobs is infeasible or very costly.

**An Analysis of the Gainers and Losers**

Some claim that, while perhaps not reducing citizen-held jobs one-for-one, large immigrant flows are indeed harmful to American workers. This view is probably the dominant force behind our restrictive immigration policy and the consequent concern about illegal immigration.

The argument is based primarily on a single-market analysis like that contained in Figure 10.1, where only the effects on the market for rough labor are examined. As far as it goes, the argument is plausible. When immigration increases the supply of rough laborers, both the wages and the employment levels of American citizens working as

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**FIGURE 10.2**

Demand and Supply of "Rough Laborers" with a Minimum Wage.
laborers are reduced. The total wage bill paid to American laborers falls from $W_0N_0B$ in Figure 10.1 to $W_0N_0D$. Thus, some American workers lose the market in response to the reduced wage, and those who stay earn less. If the Americans employed as laborers are the target of antipoverty efforts, the influx of immigrants could frustrate such efforts by reducing their wages, employment levels, or working hours.

Even if the immigration of unskilled labor were to adversely affect domestic laborers, however, it would be a mistake to conclude that it is necessarily harmful to Americans as a whole. First, immigration of "cheap labor" clearly benefits consumers using the output of this labor. As wages are reduced and employment increases, the goods and services produced by this labor are increased in quantity and reduced in price.

Second, employers of rough labor (to continue our example) are obviously benefited at least in the short run. In Figure 10.1, profits are increased from $W_0AB$ to $W_0AC$. This rise in profitability will have two major effects. By raising the returns to capital, it will serve as a signal for investors to increase investments in plant and equipment (the investment funds could be attracted from overseas as well as from domestic sources). Increased profits will also induce more people to become employers. The increases in capital and the number of employers will eventually drive profits down to their normal level, but in the end the country's stock of capital is increased and opportunities are created for some workers to become owners.

Third, our analysis of the market for laborers assumed that the influx of immigrants had no effect on the demand curve (which was held fixed in Figure 10.1). This is probably not a bad assumption when looking at just one market, because the fraction of earnings immigrant laborers spend on the goods and services produced by rough labor may be small. However, immigrants do spend money in the United States, and this added demand creates job opportunities for others (see Figure 10.3). Thus, workers who are not close substitutes for unskilled immigrant labor may benefit from immigration because of the increase in consumer demand attendant on this addition to our working population.

(Note: Recall from chapter 3 that if the demand for skilled workers increases when the wage of unskilled labor falls, the two grades of labor would be gross complements. Assuming skilled and unskilled labor are substitutes in the production process, the only way they could be gross complements is if the scale effect of a decline in the unskilled wage dominated the substitution effect. In the case of immigration one may suppose the scale effect to be very large, because as the working population rises, aggregate demand is increased. While theoretical analysis cannot prove that the demand for skilled workers is increased by the immigration of unskilled labor if the two grades of labor are substitutes in the production process, it can offer the above observation that an increase in demand for skilled workers remains a distinct possibility. Of course, for any type of labor that is complementary with unskilled labor in the production process—supervisory workers, for example—immigration does not represent a clear-cut gain.30)


FIGURE 10.3 Market for Laborers

Figure 10.3 shows the market for laborers, with the normal supply and demand curves. The demand curve is downward sloping, indicating a negative relationship between the price of labor and the quantity demanded. The supply curve is upward sloping, indicating a positive relationship between the price of labor and the quantity supplied. The equilibrium point is where the supply and demand curves intersect, and the equilibrium wage is determined by the intersection of the two curves. The quantity of labor supplied is the quantity demanded at the equilibrium wage.
Given the theoretical implications that immigration can produce gains for some native workers and losses for others, estimating the actual effects of immigration on various groups of natives has been of considerable interest in recent years. Most research studies attempt to measure the effects of immigration on native wage and employment levels by using local labor markets as units of observation. These studies assume that the greater the influx of immigrants into an area, the greater will be the area’s change in native wage and employment levels. Comparisons can be made of native wage and employment levels in the same area before and after an increase in immigration (as in Example 10.3), or they can be made for a given year among areas with very different immigrant compositions. No matter which kind of comparison is made, studies using local labor markets as units of observation estimate that the effects of immigration on native wages and employment levels are minimal, even among unskilled minority workers for whom low-skilled immigrants would be potential substitutes.  

Possible explanations for the surprisingly negligible effects of immigration estimated from local labor market studies are that (a) immigrants may choose to locate in areas where jobs are expanding anyway; or (b) internal migration by natives may have offset the effects of external immigration.  

EXAMPLE 10.3

The Mariel Boatlift and Its Effects on Miami's Wage and Unemployment Rates

Between May and September of 1980, some 125,000 Cubans were allowed to emigrate to Miami from the port of Mariel in Cuba. These immigrants, half of whom per


manently settled in Miami, increased Miami's overall labor force by 7 percent in under half a year. Because two-thirds of "the Marielis" had not completed high school, and because unskilled workers made up about 30 percent of Miami's workforce, it is likely that the number of unskilled workers in Miami increased by 16 percent or more during this short period. Such a marked and rapid increase in labor market size is highly unusual, but it provides an interesting "natural experiment" on the consequences of immigration for a "host" area.

As discussed in the text, the effects of immigration on host areas are more complex than those associated with a simple shift in supply. The demand for labor itself shifts as a result of an influx of consumers/workers, and there also may be adjustments in locational decisions by present or potential residents of an area. In the case of the Mariel boatlift, the effects on the wages and unemployment rates of unskilled workers in Miami were surprisingly small.

If immigration has negative effects on wages in the receiving areas, we would expect to observe that the wages of Miami's unskilled workers fell relative to the wages of its skilled workers and relative to the wages of unskilled workers in otherwise comparable cities. Neither relative decline occurred; in fact, the wages of unskilled black workers in Miami actually rose relative to wages of unskilled blacks in four comparison cities (Atlanta, Los Angeles, Houston, and Tampa). Similarly, the unemployment rate among low-skilled blacks in Miami improved, on average, relative to that in other cities during the five years following the boatlift. Among Hispanic workers, there was a predictably increase in Miami's unemployment rate relative to that in the other cities in 1981, but from 1982 to 1985 the Hispanic unemployment rate in Miami fell faster than in the comparison cities.

What accounts for the absence of adverse pressures on the wages and unemployment rates of unskilled workers in the Miami area? Concurrent rightward shifts in the demand curve for labor probably tended to offset the rightward shifts in labor supply curves. However, it also appears that some residents may have left Miami in response to the influx of immigrants and that other potential migrants went elsewhere; the rate of Miami's population growth after 1980 slowed considerably relative to that of the rest of Florida, so that by 1986 its population was roughly equal to what it was projected to be by 1986 before the boatlift. For locational adjustments of residents and potential in-migrants to underlie the lack of wage and unemployment effects, these adjustments would have to have been very rapid. Their presence reinforces the theoretical prediction, made earlier in this chapter, that migration flows are sensitive to economic conditions in both sending and receiving areas.

help to counteract the increased supply of immigrants (as natives avoid or leave areas of heavy immigrant inflow). If not properly controlled for, both of these behaviors could mask the true effects of immigration on local labor markets. While there is some evidence that native internal migration rates do react to immigration (as seen in Example 10.3), for counteracting internal flows to explain many of the negligible estimates would require implausibly rapid responses on the part of native migrants. Thus, while the true effects of immigration on various groups of native workers remain something of a puzzle, they are most likely not very large.

**Do the Overall Gains from Immigration Exceed the Losses?**

So far, we have used economic theory to analyze the likely effects of immigration on various groups of natives, including consumers, owners, and both skilled and unskilled workers. Theory suggests that some of these groups should be clear-cut gainers; among these are owners, consumers, and workers who are complements in production with immigrants. Native workers whose labor is highly substitutable in production with immigrant labor are the most likely losers from immigration, while the gains vs losses for other groups of native workers are theoretically unpredictable owing to potentially offsetting influences on the substitution and scale effects. Further, as we have seen from empirical studies, the actual effects that have been estimated for several of the above groups are apparently quite small, but these effects still must be classified as uncertain.

In this subsection, we use economic theory to analyze a slightly different question: What does economic theory say about the overall effects of immigration on the host country? Put in the context of the normative criteria presented in chapter 1, this subsection asks, “If there are both gainers and losers from immigration among natives in the host country, is it likely that the gainers would be able to compensate the losers and still feel better off?” The answer to this question will be yes if immigration increases the aggregate disposable income of natives. Immigration potentially adds people who are both consumers and producers to the host country, so whether an influx of immigrants makes those already residing in the host country richer or poorer, in the aggregate, depends to a large extent on how much the immigrants add to overall production as compared to how much they consume. Let us take a simple example of elderly immigrants allowed into the country to reunite with their adult children. If these immigrants do not work, and if they are dependent on their children or on American taxpayers for their consumption, then clearly the overall per capita disposable income among natives must fall. (This fall, of course, would be offset by the increased utility of the reunited families, in which case it would be a price the host country might be willing to pay.)

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"For a study indicating that the locational decisions of natives are virtually unaffected by immigrant inflows, see David Card, "Immigrant Inflows, Native Outflows, and the Local Labor Market Impacts of Higher Immigration," working paper no. 9927, National Bureau of Economic Research, Cambridge, Mass., February 1997."
In the slightly more complicated case in which immigrants work after their arrival, our profit-maximizing models of employer behavior suggest that they are paid no more than the value of their marginal product. Thus, if they rely only on their own earnings to finance their consumption, immigrants who work do not reduce the per capita disposable income of natives in the host country. Moreover, if immigrant earnings are not equal to the full value of the output they add to the host country, then the total disposable income of natives will increase.

Our analysis of the effects of working immigrants cannot end here, though, because most host countries (including the United States) have several government programs, financed by various taxes, that may distribute benefits to qualitatively different immigrants. If the taxes paid by immigrants are sufficient to cover the benefits they receive from such programs, then the presence of these immigrants does not threaten the per capita disposable income of natives. Indeed, some government programs, such as national defense, are true "public goods" (whose costs are not increased by immigration), and any taxes paid by immigrants help natives defray the expenses of these programs. However, if immigrants are relatively high users of government support services, and if the taxes they pay do not cover the value of their benefits, then it is possible that the fiscal burden of immigration could be large enough to reduce the aggregate income of natives.

Given the declining skills of recent immigrant cohorts, and given that many government programs (public health, welfare, and unemployment insurance, for example) are aimed at subsidizing the poor, there is growing concern that recent immigration to the United States may be harmful to natives. One study found that recent immigrants are relatively high users of welfare programs (including food stamps and medical and housing subsidies), while another found that they are much less likely than natives to become institutionalized for crime or mental disorders. The most comprehensive study of the net fiscal effects of recent immigration suggests that these effects—measured over the lifetimes of the immigrants and their descendants—are positive (that is, the immigrants and their descendants pay more in taxes than they receive in government benefits), with a present value averaging $50,000 per immigrant. For various subgroups of immigrants, the study estimates that net fiscal effects are more likely to be positive if immigrants come as young adult workers and if they are better educated. For example, immigrants with more than a high school education are estimated to have a positive net fiscal effect averaging $198,000, while those with a high school education average a positive effect of $53,000. For immigrants with less than a high school education, the net fiscal effects are estimated to be a negative $13,000.2

2Economic theory suggests this will be the case if the shift in labor supply is large enough to significantly lower the marginal revenue product of labor in the immigrants' labor market. If so, wages will fall, output will expand, and the profits from the added output are captured by others, who are presumably natives.


4James P. Smith and Barry Edmonston, eds., The New Americans, p. 334.
Illegal immigration has been the major focus of immigration policy in recent years, so it is interesting to consider how it, in particular, is likely to affect the overall disposable incomes of American citizens (and other legal residents). While the exact answer is unknown, three considerations suggest that illegal immigration may be more likely to increase native incomes than legal immigration!

First, illegal immigrants come mainly to work, not for purposes of family reunification. Therefore, they clearly add to the production of domestic goods and services. Second, while they tend to be poor, they are ineligible for many programs (welfare, food stamps, Social Security, unemployment insurance) that transfer resources to low-income citizens. Third, despite their wish to "hide" from the government, immigrants cannot avoid paying most taxes (especially payroll, sales, and property taxes); indeed, one study even indicated that 75 percent of illegal immigrants had income taxes withheld but that relatively few filed for a refund.7

Thus, one cannot rule out the possibility that, despite governmental efforts to prohibit it, the "transaction" of illegal immigration is—to use the normative terminology of chapter 1—"Pareto-improving." That is, the immigrants themselves clearly gain (otherwise they would go back home) while as a group, natives may well not lose. The issue is clearly an empirical one, and the net effects of illegal immigration probably deserve more study before the country decides to allocate more resources to stopping it.

EMPLOYEE TURNOVER AND JOB MATCHING

While most workers who experience geographic mobility also change jobs (although perhaps not employers), these migrants are but one part of a wider group of workers who change jobs each year with or without a change of residence. Data from Canada, for example, suggest that over the last decade or so, roughly one-fifth of all workers permanently separate from their employers in any given year.8 Some of these separations were voluntary, in the sense that they were initiated by the employee, and others were involuntary (employer-induced). Voluntary separations are termed quits, and involuntary separations are termed layoffs. The layoffs counted in the above data for Canada were permanent discharges, either firings for cause or associated with the closing of plants or production lines. (Other layoffs, however, can be temporary separations, in which case the worker expects to be rehired when business recovers.) As we shall see below, however, the distinction between employer- and employee-initiated separation may be less clear than these categories suggest.

8 Gregory DeFilippis, Inequality at Work: Hench(1985).
From the perspective of an individual worker, the human capital model suggests that changing jobs is a costly transaction that will be undertaken voluntarily only if the expected benefits are relatively large. Workers, then, are seen as using job mobility as a means of improving their personal well-being. From a more global perspective, however, worker mobility performs the socially useful role of matching workers with the employers who value their skills most highly. We elaborate briefly below.

Workers are unique, in the sense that each one has skills and interests that are different from those of others. Employers, for their part, have differing demands for skills and other worker characteristics that are a function of consumer preferences for their products, available production technologies, and even such factors as their management practices. For example, some jobs have duties or work schedules that are highly structured and predictable, while similarly skilled workers in other firms face tight deadlines on short notice, making for a highly variable work schedule. Workers who favor predictable routines and dislike last-minute demands on their time will clearly be more productive in the former environment, while equally skilled workers who relish change and challenges may be more productive in the latter.

Given that the information workers and employers initially have about each other is both incomplete and costly to obtain, it is highly unlikely that the first "match" a worker is able to make with an employer will turn out to be the best one that is ultimately available; therefore, subsequent mobility plays a critical role in improving the job match for a given worker over time. Employers will desire to hire workers who are less productive than they believed them to be at the time of hire, and workers will want to quit if their talents can command a higher wage (presumably because they are more productive) elsewhere. The economy thus edges toward the goal of good matches through a process of trial and error. When an error is made in matching a worker with an employer, the employment relationship is terminated and mobility occurs, but when a good match is made the relationship can be expected to endure.

The Patterns of Job Mobility

We will see a bit later (in Table 10.6, page 368) that between the ages of 20 and 60, males in the United States work for an average of over seven different employers, and they work for three of those during their twenties alone. This average, however, masks considerable variation in personal mobility rates. One study, for example, found that 8 percent of American workers with ten years of work experience had worked that time for a single employer, while 28 percent had worked for six or more employers during that period.26 In the subsections below, we employ human capital theory to analyze the patterns of job mobility that appear to exist.

Wage Effects Human capital theory predicts that, other things equal, a given worker will have a greater probability of quitting a low-wage job than a higher-paying one. That is, workers employed at lower wages than they could obtain

Employee Turnover and Job Matching

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elsewhere are the most likely to quit. Indeed, a very strong and consistent finding in virtually all studies of worker quit behavior is that, holding worker characteristics constant, employees in industries with lower wages have higher quit rates. At the level of individual workers, research indicates that those who change employers have more to gain from a job change than those who stay and that, indeed, their wage growth after changing is faster than it would have been had they stayed.16

In thinking about the relationship between quit rates and wages, it is useful to bear in mind a constant theme throughout this text: market outcomes are the result of both worker and employer behavior. While workers may decide to quit if their wages fall below what they could get elsewhere, employers often have incentives to reduce quits by raising wages. We may talk of a quit as a "worker-initiated," but the fact that an employer did not choose to take steps to retain potential quitters would seem to imply that the employer believed keeping them was not worth the cost. For example, Japanese firms offer more firm-specific training than U.S. firms and offer their workers much larger wage increases as employee tenure with the firm increases; the result is an average yearly separation rate that is one-fourth the U.S. average. Thus, the distinction between worker-initiated and employer-induced quits is somewhat ambiguous.17 To expand on this point, we shall briefly discuss the relationship between quit rates and firm-specific human capital investments in the context of both firm size and gender differences in quit rates.

From Table 10.5, it can be seen that quit rates tend to decline as firm size increases.

One explanation for this phenomenon is that large firms offer more possibilities for transfers and promotions. Another, however, builds on the fact that large firms generally pay higher wages.18 This explanation asserts that large firms tend to have highly mechanized production processes, where the output of one worker team is highly dependent on that of production groups preceding it in the production "chain." Larger firms, it is argued, have greater needs for dependable and steady workers because employers who shirk their duties can impose great costs on a highly interdependent production process. Large firms, then, establish "internal labor markets" for the reasons suggested in chapter 5: that is, they hire workers at entry-level jobs and carefully observe such hard-to-screen attributes as reliability, motivation, and attention to detail. Once having invested time and effort in selecting the best workers for its operation, a large firm finds it costly for such workers to


18Recent research indicates that employees who are fired experience a decline in wages, while those who

quit for other than "family" reasons experience an increase; see Kristin Keith, "Reputation, Voluntary Mobility, and Wages," Review of Economics and Statistics 77, no. 3 (August 1995): 556–563.

TABLE 10.5
Monthly Quit Rates per 100 Workers by Firm Size, Selected Industries
(1977–1981 averages)

<table>
<thead>
<tr>
<th>Industry</th>
<th>Number of Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 250 Employees</td>
</tr>
<tr>
<td>All manufacturing</td>
<td>3.28</td>
</tr>
<tr>
<td>Food and beverage products</td>
<td>3.46</td>
</tr>
<tr>
<td>Fabricated metal products</td>
<td>3.33</td>
</tr>
<tr>
<td>Electrical machinery</td>
<td>3.81</td>
</tr>
<tr>
<td>Transportation equipment</td>
<td>3.90</td>
</tr>
</tbody>
</table>


quit. Thus, large firms pay high wages to reduce the probability of quitting because they have substantial firm-specific screening investments in their workers. It has been widely observed that women workers have higher quit rates, and therefore shorter job tenures, than men. To a large degree, this higher quit rate probably reflects lower levels of firm-specific human capital investments. We argued in Chapter 9 that the interrupted careers of "traditional" women workers rendered many forms of human capital investment less beneficial than would otherwise be the case, and lower levels of firm-specific training could account for lower wages, lower job tenures, and higher quit rates. In fact, once the lower wages and shorter careers of women are controlled for, there appears to be no difference between the sexes in the propensity to quit a job, especially among those with more than a high school education.

Cyclical Effects Another implication of human capital theory is that workers will have a higher probability of quitting when it is relatively easy for them to obtain a better job quickly. Thus, when labor markets are tight (jobs are more plentiful relative to job seekers), one would expect the quit rate to be higher than when labor markets are loose (few jobs are available and many workers are being laid off). This prediction is confirmed in studies of time-series data. Quit rates tend to rise when the labor market is tight and fall when it is loose. One measure of tightness is the unemployment rate; the negative relationship between the quit rate and unemployment is robust across a wide range of samples.

and unemployment can be readily seen in Figure 10.4. Another measure of labor market conditions is the layoff rate, which tends to rise in recessions and fall when firms are expanding production. It, too, is inversely correlated with the quit rate, as Figure 10.4 shows.

One interesting issue is whether the "quality" of job matches rises or falls during a recession (quality is measured by the likelihood that the employment relationship will not be permanently dissolved by either party). On the one hand, when job openings are few and job seekers are plentiful, employers have more applicants for each open position and can be more selective in making offers of employment. This reasoning suggests that match quality might increase in a recession. On the other hand, workers can expect fewer offers and may thus be more inclined during recessions to take the first offer that comes along, with workers being less selective, match quality might deteriorate. Recent research suggests that the latter influence dominates and that match quality during recessions is reduced.37

Age and Job Tenure A consistent theme in this and the preceding chapter is that younger workers are more likely to make human capital investments of all kinds. As Table 10.6 indicates, this appears to be true for job mobility investments as well. In both the United States and the United Kingdom, the number of new employers for whom the average employee works declines with age. In the United

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TABLE 10.6

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Number of New Employees during Age Interval</th>
<th>Cumulative Number of Employers</th>
</tr>
</thead>
<tbody>
<tr>
<td>20-29</td>
<td>3.1</td>
<td>1.9</td>
</tr>
<tr>
<td>30-39</td>
<td>2.1</td>
<td>1.2</td>
</tr>
<tr>
<td>40-49</td>
<td>1.4</td>
<td>0.9</td>
</tr>
<tr>
<td>50-59</td>
<td>0.9</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Source: Adapted from S. W. Polachek and W. S. Siebert, The Economics of Careers (Cambridge, Eng.: Cambridge University Press, 1993), 255.

States, for example, men in their twenties change employers an average of three times, those in their thirties twice, and those in their fifties about once. In the United Kingdom, where job changing is less common, mobility also declines with age.

The decline of job mobility with age, though, potentially represents the effects of two forces. True, younger workers have a longer period over which to collect the benefits of job changing, and they may have lower investment costs as well. However, we also expect the quality of job matches to rise over the life cycle, as workers establish a work history, refine their skills, find out about their strengths and weaknesses, and are able to sequentially collect and evaluate more job offers. If match quality for a worker does improve over time, we would expect to find that the longer one has been in a job, the less likely it is that he or she will separate from it. Recent studies do suggest that holding age constant, the longer one has been with an employer the less likely it is that the employment relationship will be ended in a future period; further, the results suggest that the influence of job matching may even be greater than the influence of age alone.9

Costs of Quitting

Economic theory predicts that when the costs of quitting one's job are relatively low, mobility is more likely. This observation underlies our analysis of the rise in quit rates during periods of prosperity, for example, and we

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ical Economy 87 (October 1979): 752-990; and Kenneth J. McLaughlin, "Rent Sharing in an Equilibrium Model of Matching and Turnover," Journal of Labor Economics 12, no. 4 (October 1994): 499-523. One recent study of the "job matching" hypothesis found that the probabilities of both quits and involuntary separations rose initially with time on the job (as employers and employees give the employment relationship a chance to work out), but that they fell after the initial trial period; see Julia Lane and Michael Perkin, "Turnover in an Accounting Firm," Journal of Labor Economics 16, no. 4 (October 1998): 702-717. For a discussion of the dif-
can also see the effects of mobility costs when looking at residential location and job turnover. Industries with high concentrations of employment in urban areas, where a worker’s change of employer does not necessarily require investing in a change of residence, appear to have higher rates of turnover (holding wage rates and employee age constant) than industries concentrated in nonmetropolitan areas.\textsuperscript{40}

Beyond the costs that can be associated with such measurable characteristics as age and residential location are those that are psychic in nature. These latter costs, though unobservable to the researcher, are very likely to differ widely across individuals (for example, some people adapt more quickly to new surroundings than others do). Recent studies have found considerable heterogeneity among workers in their propensities to change jobs, with one study estimating that almost half of all permanent separations that took place over a three-year period involved a small number (13 percent) of workers who had three or more separations during the period (in contrast, 31 percent of workers had no separations at all during the period).\textsuperscript{40}

It is also possible that the costs of job changing by employees vary internationally. Data we saw in Table 10.6, and earlier in Example 5.4 (chapter 5), suggested that workers in the United States may well be more likely to change employers than workers elsewhere. Indeed, Table 10.7 confirms that, on average, American workers have been with their current employers fewer years than workers in most other developed economies, particularly those in Europe and Japan. We do not know why Americans are more mobile than most others, but one possibility discussed in chapter 5 related to the lower levels of company training received by American


\textsuperscript{40}Patricia M. Anderson and Bruce D. Meyer, "The Extent and Consequences of Job Turnover," Brookings Papers on Economic Activity, Microeconomics (1994): 177-248; Farber, "The Analysis of Intertemporal Worker Mobility."
workers (which is both a cause and an effect of short expected job tenures). Another possibility, however, is that the costs of mobility are lower in the United States (despite the fact that Japan and Europe are more densely populated and hence more "urban"). What would create these lower costs?

One hypothesis that has received at least some investigation is that housing policies in Europe and Japan increase the costs of residential, and therefore job, mobility. Germany, the United Kingdom, and Japan, for example, have controls on the rent increasesthat landlords can charge to existing renters, while tending to allow them freedom to negotiate any mutually agreeable rent on their initial lease with the renter. Thus, it is argued that renters who move typically face very large rent increases in these countries. Similarly, subsidized housing is much more common in these countries than in the United States, but since it is limited relative to the demand for it, those British, German, or Japanese workers fortunate enough to live in subsidized units are reluctant (it is argued) to give them up. The empirical evidence on the implications of housing policy for job mobility, however, is both limited and mixed.

One could also hypothesize that the United States, Australia, and Canada, all of which exhibit shorter job tenures than most European countries and Japan, are large, sparsely populated countries that historically have attracted people willing to immigrate from abroad or resettle internally over long distances. In a country of "movers," moving may not be seen by either worker or employer as an unusual or especially traumatic event.

While questions remain about the causes of different job mobility rates across countries, the social desirability of greater mobility can also be debated. On the one hand, mobility can be seen as socially useful, because it promotes both individual well-being and the quality of job matches. In chapter 8 we pointed out, for example, that mobility (or at least the threat of mobility) was essential to the creation of compensating wage differentials. Moreover, the greater the number of workers and employers in the market at any given time, the more flexibility an economy has in making job matches that best adapt to a changing environment. Indeed, when focusing on this aspect of job mobility, economists have long worried whether economic conditions provide enough mobility. A recent case in point is the concern whether employers have created "job lock" by adopting pension plans and health insurance policies that are not portable if the employee leaves the firm.

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* It has also been suggested that American job matches may be relatively poor; see John Bishop, "Improving Job Matches in the U.S. Labor Market," Brookings Papers on Economic Activity: Microeconomics (1989): 355-400.


* One recent study, for example, found no evidence that American employers stigmatized employees who frequently changed jobs; see Keith, "Reputation, Voluntary Mobility, and Wages."

On the other hand, lower mobility costs (and therefore greater mobility) among workers may well serve to reduce the incentives of their employers to provide job training. As discussed in Chapter 5, the high rate of job mobility among American workers apparently serves to frustrate the goal of upgrading their skills through company training.

Whether the presence of job-changing costs is a social boon or bane, these costs and the mobility associated with them are factors with which employers must contend. We comment in the next subsection on how these costs might alter our simple model of labor demand, and we then move on in the next chapter to a consideration of the various pay strategies employers can use both to recruit and retain the "right" employees and to provide them with the best set of production incentives.

Costs of Turnover and the Monopsony Model

In chapters 3 and 4, we noted that some economists have begun to explore theoretical models that produce monopsony-like behavior by employers in situations in which they are not the sole buyers of labor in a particular market. These explorations are motivated partly by the desire to explain why it might be difficult to find the employment reductions that standard labor demand theory expects to occur when the minimum wage is increased. A deeper motivation for these explorations, however, is the desire to analyze whether more-complex models of employer and employee behavior yield important insights that are not produced by simpler models. We now briefly consider the implications for labor demand theory of the fact that employee turnover is costly. Further complexities and their implications for labor demand are analyzed in chapter 11.

Background Issues

The student will recall that in the standard model of labor demand, each employer is assumed to face a labor supply curve that is horizontal at the market wage rate. That is, any single firm is assumed to be a "wage taker" that can always hire additional workers at a constant (market) wage of, say, \( W^* \). The firm has no incentive to pay above the market wage, because it can secure all the employees it wants at \( W^* \), and if it paid below the market wage it would lose all its workers to other firms. This horizontal supply curve also means that the marginal cost of hiring labor is constant at \( W^* \). With a downward-sloping marginal revenue product of labor curve, the profit-maximizing firm (which hires until marginal revenue product equals \( W^* \) therefore has a downward-sloping labor demand curve.

From the standard model arises the "law of one price," which states that, in equilibrium, all firms in the market for workers of the same skill will pay the same wage rate, as long as conditions of employment are the same. Two points must be made concerning the law of one price. First, a major implication of this law is that, with the exception of compensating differentials for employment conditions of one sort or another, wages will be determined by workers' human capital characteristics. All firms would have to pay the market wage for each skill group regardless of their level of profitability, their industry, or their size. Under this model, then, employer characteristics do not influence wages except when either
favorable or unfavorable employment conditions give rise to compensating wage differentials.

Second, worker mobility is what generates the "one price" for labor of a given skill. If workers of equal skill were paid different wages by employers with comparable working conditions, the standard, competitive model asserts that the lower-paid ones would quit their jobs and seek employment with higher-paying firms. Wages in the lower-paying firms thereby would be driven up, while wages in the higher-paying firms would be driven down, by worker mobility. The standard model, with its horizontal labor supply curve facing each firm, implicitly assumes that mobility is costless and that the quit rate among workers is infinitely elastic with respect to wages (that is, if a firm were to cut its wages below those paid elsewhere, all its workers would quit).

The Implications of Mobility Costs In this chapter, we have pointed out that job mobility is costly, and that the decision to change jobs can be analyzed as an investment in human capital. The human capital model of job mobility, as captured in equation (10.1), implies that a worker will not invest in mobility if the present value of the net benefits is negative. That is, even if the gross benefits of switching one's job are positive, making the change is not worthwhile if these benefits are small relative to the costs of searching for other offers, ending one's current employment relationship, possibly moving to a new residence, and settling into a new job.

If the costs of changing jobs make some wage (or utility) gains not worth capturing, and if these costs differ across individual workers, then we would not expect the quit rate to be infinitely responsive to wages. A small deviation from the market wage by a given firm might induce some workers to change employers, but a larger deviation would be required before others are induced to invest in mobility. Of course, one might reasonably expect supply to be more responsive to wages in the long run, because new entrants to the labor force are searching anyway and can choose the best opportunities (or avoid the worst) without having to incur the costs of severing ties with a current employer. However, if information is difficult to obtain and search is costly even in the long run, wage differences across workers with the same human capital characteristics and similar conditions of employment might persist more or less permanently.

Empirically, economists have estimated that quit rates respond to wages in the expected way (they rise when wages fall), but the estimated response is considerably less than infinitely elastic. Moreover, there is also evidence of persis-
tent wage differentials across industries and firm-size groups⁶ that researchers have not been able to explain by differences in workers' human capital or by conditions giving rise to compensating wage differentials. While there are other potential explanations for these findings, the evidence on quit rates and wage differentials is certainly consistent with the presence of search and relocation costs that impede worker mobility.

The presence of mobility costs implies that individual firms well might face upward-sloping labor supply curves over some range of wages and some finite time period. A firm could lower its wages (at least to some extent) without losing all its workers to other firms, and it could raise its wages by some amount without attracting all the workers from other firms. As was pointed out in chapter 3, the essence of the monopsonistic model of employer demand for labor is an upward-sloping labor supply curve to individual employers. It is this upward-sloping supply curve that drives the firm's marginal cost of labor above its wage rate, thus creating uncertainty about how its desired level of employment will respond to a mandated wage increase. (The student will recall from chapter 3 that when the marginal cost of labor is above the wage, small mandated wage increases can simultaneously raise the wage level and reduce the marginal cost of labor.) One possible source of monopsony-like behavior by firms, then, is the presence of costs associated with job-hanging.⁷

While monopsony-like behavior by an employer is rooted in an upward-sloping labor supply curve—which causes the firm's marginal costs of labor to lie above its wage rate—the extent to which this behavior deviates from that presumed by the standard labor demand model is a function of the extent to which marginal costs of labor exceed the wage rate. If marginal costs are substantially above the wage rate to begin with, for example, then even a relatively large mandated wage increase could still reduce the marginal costs of labor to the firm (and lead to theoretically ambiguous expectations about changes in the level of employment). However, if marginal costs were only slightly above the wage to begin with, the same mandated wage increase might raise the marginal costs of labor, which would lead us to expect the conventionally predicted fall in employment.

As illustrated in Figure 10.5, the degree to which a firm's marginal costs of labor exceed its wage rate depends on how steeply sloped its labor supply curve is.⁸ When mobility costs are lower, the labor supply curve to an individual employer will be flatter (Figure 10.5a) and the associated marginal cost curve will rise relatively slowly. If mobility costs are higher, both the firm's labor supply curve and its marginal costs of labor rise sharply (see Figure 10.5b). Given

⁶Card and Krueger, Myth and Measurement, 373–381, summarizes, and provides references to, the literature on monopsony models that are based on mobility costs.

⁷It can be mathematically proven that, with a straight-line labor supply curve to the firm, such as the one illustrated in Figure 10.5, the accompanying marginal cost of labor curve has a slope that is flatter than that of the labor supply curve.
its marginal revenue product of labor curve, if the firm were faced with a labor supply curve such as the one in panel (a), it would have a profit-maximizing employment level of $E_x$ would pay a wage of $W_x$ and the extent to which its marginal costs of labor exceeded its wage rate would be given by the distance $AB$. If instead the firm faced a supply curve like the one in panel (b), the gap between its marginal costs of labor and its wage rate ($W_x$) at the profit-maximizing level of employment ($E_x$) would be equal to the distance $A'B'$, which is greater than $AB$. Thus, the extent to which a firm behaves like a monopsonist is a function of how steeply sloped its labor supply curve is—which, in turn, a function of mobility costs.

**REVIEW QUESTIONS**

1. You may know that states now license lawyers, teachers, pharmacists, nurses, doctors, and so forth. These licensing procedures operate in such a way that unless lawyers, teachers, etc., pass a state test and become licensed, they cannot work in their profession in that state. A recent letter to *USA Today* stated:

   Bill Clinton should remove state-to-state licensing barriers. Every time a lawyer, teacher, or health-care worker moves, some bureaucracy...
tells him he can't work. One of the biggest health-care costs is all this ridiculous licensing.

Please answer the following questions:

a. From the perspective of positive economics, what are the labor market effects of having states, rather than the federal government, license professionals?

b. Who would gain and who would lose from federalization of occupational licensing?

2. As you know, thousands of illegal immigrants are working in the United States. Suppose the United States increases the penalties for illegal immigration to include long jail sentences for illegal workers. Analyze the effects of this increased penalty on the wages and employment levels of all affected groups of workers.

3. It has been said, "The fact that quit rates in Japan are lower than in the United States suggests that Japanese workers are inherently more loyal to their employers than are American workers." Assuming that quit rates are indeed lower in Japan than in the United States, evaluate this assertion that Japanese workers have stronger preferences for loyalty than do American workers.

4. One way for the government to facilitate economic growth is for it to pay workers in depressed areas to move to regions where jobs are more plentiful. What would be the labor market effects of such a policy?

PROBLEMS

1. Rose lives in a poor country where she earns $5,000 per year. She has the opportunity to move to a rich country for $2,000, and it would cost her $10,000 per year to live in the rich country. Rose's discount rate is 10 percent. Rose decides not to move because she will be separated from her friends and family. Estimate the psychic costs of Rose's move.

2. Suppose that the demand for "rough labor" is $L_w = 100 - 10W$, where $W =$ wage per hour and $L_w =$ number of workers. If immigration increases the number of rough laborers hired from 50 to 60, by how much will the short-run profits of employers in this market change?
SELECTED READINGS


