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## **Economics of Migration**

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**Migration:** A move from one geographic area to another. *Residential migration* occurs when the household (or person) changes its place of residence by moving from one neighborhood to another within the same local area. *Internal migration* occurs when the household moves across larger geographically distinct units—such as counties, metropolitan areas, states, or provinces—but remains within the same country. *International migration* occurs when the household moves across national boundaries.

### Migration and Economic Efficiency

The study of migration lies at the core of labor economics because the analysis of labor flows—whether within or across countries—is a central ingredient in any discussion of labor market equilibrium. Workers respond to regional differences in economic outcomes by voting with their feet. These labor flows improve labor market efficiency.

Suppose there are two regional labor markets in a particular country, the North and the South, and that these two markets employ workers of similar skills. Suppose further that the current wage in the North exceeds the wage in the South.

Under some conditions, the wage differential between the two regions will not persist once the economy attains a competitive national equilibrium. After all, the wage differential encourages some Southern workers to pack up and move North, where they can earn higher wages and presumably attain a higher level of utility. The flow of Southern workers into the North would raise the Southern wage and depress the Northern wage. If there were free entry and

exit of workers in and out of labor markets, the national economy would eventually be characterized by a single wage.

The single wage property of competitive equilibrium has important implications for economic efficiency. The theory of labor demand shows that the wage equals the value of marginal product of labor in a competitive market. As workers move to the region that provides the best opportunities, they eliminate regional wage differentials. Therefore, workers of given skills have the same value of marginal product of labor in all markets. The allocation of workers to firms that equates the value of marginal product across markets is an *efficient* allocation because it maximizes national income.

To see why a competitive equilibrium is efficient, suppose that a benevolent dictator takes over the economy and that this dictator has the power to dispatch workers across regions. In making allocation decisions, this dictator has one overriding objective: to maximize the country's income. When the dictator first takes over, he sees that the wage in the North exceeds the wage in the South. This wage gap implies that the value of marginal product of labor is greater in the North than in the South.

The dictator picks a worker at random. Where should this worker be allocated? Because the dictator wants to maximize national income, the worker will be sent to the region where he is most productive, the North. In fact, the dictator will keep allocating workers to the Northern region as long as the value of marginal product of labor is greater in the North than in the South. The law of diminishing returns implies that as the dictator forces more and more people to work in the North, the value of marginal product of Northern workers declines. In the end, the dictator will maximize national income only when the value of marginal product of workers is the same in all labor markets.

In sum, migration and economic efficiency are closely linked in a competitive economy. Through an “invisible hand,” workers who search selfishly for better opportunities accomplish a goal that no one in the economy had in mind: an efficient allocation of resources.

### **An Economic Model of Migration**

In 1932, Sir John Hicks argued that “differences in net economic advantages, chiefly differences in wages, are the main causes of migration.” Practically all modern studies of migration use this hypothesis as the point of departure and view the migration of workers as a type of human capital investment (Sjaastad, 1962; see *Human capital*). Workers calculate the value of the opportunities available in each of the alternative labor markets, net out the cost of making the move, and choose whichever option maximizes the net present value of lifetime income.

Suppose there are two labor markets where a particular worker can be employed. The worker is currently employed in region  $i$  and is considering a move to region  $j$ . The worker, who is  $t$  years old, earns  $w_{it}$  dollars. If he were to move, he would earn  $w_{jt}$  dollars. It costs  $M$  dollars to move from  $i$  to  $j$ . These migration costs include the actual expenditures incurred in transporting the worker and his family, as well as the dollar value of the “psychic cost”—the pain and suffering that inevitably occurs when one moves away from family, neighbors, and social networks.

Like all other human capital investments, migration decisions are guided by the comparison of the present value of lifetime earnings in the alternative opportunities. The net gain to migration is given by:

$$(1) \quad \text{Net Gain} = \sum_{k=t}^T \frac{w_{jk} - w_{ik}}{(1+r)^{k-t}} - M,$$

where  $r$  is the discount rate and  $T$  is the age of retirement . The worker moves if the net gain is positive.

A number of empirically testable propositions follow immediately from this framework:

1. An improvement in the economic opportunities available in the destination increases the net gains to migration, and raises the likelihood that the worker moves.
2. An improvement in the economic opportunities at the current location decreases the net gains to migration, and lowers the probability that the worker moves.
3. An increase in migration costs lowers the net gains to migration, and reduces the likelihood of a move.

In sum, migration occurs when there is a good chance that the worker will recoup his human capital investment. As a result, migrants will tend to gravitate from low-income to high-income regions, and the larger the income differential between the regions or the cheaper it is to move, the greater the number of migrants.

This framework has been extended to address a slightly different question: *Which* persons in the source region are most likely to move? The answer to this question is particularly important for evaluating the impact of migration flows. Suppose that 10 percent of region  $i$ 's population chooses to move to region  $j$ . The economic impact of this migration will depend on whether the migrants are randomly chosen from the source region's population or are chosen from a particular tail of the skill distribution.

Differences in migration costs across workers help sort out the migrants from the source region's population. Other things equal, those workers who find it easier to move are the ones who will, in fact, move.

The shape of the income distributions in the two regions will also help sort out the migrants—even if all workers faced the same migration costs (Borjas, 1987). Suppose that the skills of workers are portable across the two regions—so that employers value the same types of workers in each of the labor markets. Higher skills typically lead to higher earnings, but the rate of return to skills typically varies across labor markets. Two types of selection may characterize the migrant flow:

1. *Positive Selection* occurs when the migrants have above-average skills. The migrant flow from  $i$  to  $j$  is positively selected when the destination offers a higher rate of return to skills. The migrants are then drawn from the upper tail of the skill distribution because region  $i$ , in a sense, “taxes” high-skill workers and “insures” less-skilled workers against poor labor market outcomes.

2. *Negative Selection* occurs when the migrants have below-average skills. The migrant flow is negatively selected when the source region offers a larger payoff to skills. Few skilled workers will then want to move from region  $i$ .

In short, as long as regional income differences (net of migration costs) are large enough to induce migration, highly skilled workers will naturally gravitate to those regions where the rate of return to skills is high. In the optimal sorting of workers to regions, highly skilled workers live in regions that offer high rates of return to skills and less-skilled workers live in regions where the rate of return to skills is relatively low.

The simple model in equation (1) stresses how alternative *income* streams determine the migration decision for a particular worker. However, it is the alternative streams of *utility* that determine the worker's decision. After all, the worker cares not only about relative incomes, but also about the amenities and disamenities offered by the various regions.

The fact that migration maximizes utility introduces a number of interesting twists into the study of migration decisions. For instance, equation (1) ignores *why* there are regional wage differences in the first place, implicitly assuming that the national labor market is in disequilibrium (in the sense that different regions offer different opportunities to the same worker). However, regional wage differences may partly reflect compensating wage differentials that reward workers for the varying set of amenities that different regions offer (Roback, 1982). The wage would then be relatively lower in more pleasant localities. Even though a particular worker might face different wages in different labor markets, the worker's utility would be constant across labor markets. The wage differentials that are the focus of the human capital approach—and that determine the migration decision in equation (1)—are the ones that persist after the analysis has controlled for regional differences in the value of amenities and disamenities (see *Wage differentials and structure*).

## **Internal Migration**

Despite problems of comparability, the available data indicate that there is a great deal of internal migration in developed economies. In Canada and the United States, the five-year migration rate across “local areas” (localities in Canada, counties in the United States) is around 20 percent. In Ireland and Japan, the one-year migration rate across local areas (counties in

Ireland, prefectures in Japan) is between 2 and 3 percent, as compared to a one-year migration rate of 6.2 percent in the United States.

### **Determinants of Internal Migration**

A large empirical literature attempts to determine which variables best explain the size and direction of internal migration flows (see the survey in Greenwood, 1997). A few variables have been found to be good predictors in many countries.

*Age.* Migration is most common among younger workers. The human capital model provides a simple explanation for this pattern. Older workers have a shorter period over which they can collect the returns to the migration investment. The shorter payoff period decreases the net gains to migration, and hence lowers the probability of migration.

*Education.* Migration is more common among more educated workers. This correlation could arise because highly educated workers may be more efficient at learning about employment opportunities in alternative labor markets, thus reducing migration costs. It is also possible that the geographic region that makes up the relevant labor market is larger for more educated workers. Consider, for example, the labor market faced by college professors. There are few firms in any given city and professors' skills are highly portable across colleges and universities. In effect, college professors sell their skills in a national—and perhaps even an international—labor market.

*Distance.* Greater distances deter migration because greater distances imply larger migration costs. The relationship between distance and migration was an integral part of the “gravity models” that dominated the literature before the introduction of the human capital framework. The gravity model presumed a (mechanical) direct relationship between migration and the size of the destination and origin regions, as well as an inverse relationship between migration and distance.

*Other variables.* The evidence linking migration and other variables is more ambiguous. Some studies suggest that persons who are unemployed are more likely to migrate than persons who are not, and that the elasticity of migration with respect to the source region’s unemployment rate seems to be stronger for workers who are unemployed (at least in the United States). These studies, however, typically ignore that both employment and migration propensities are endogenously determined. Other studies investigate if the wage differential between the destination and source regions has a positive impact on migration. This direct test of the human capital model requires information on the earnings stream that the worker would face in both the source and destination regions. As a result, the evidence is typically very sensitive to how the selection bias problem is handled. Finally, a series of studies have begun to examine the link between internal migration and differences in social welfare benefits provided by different jurisdictions in the United States. The evidence is mixed, however, on whether “welfare magnets” attract particular types of person to generous localities (Brueckner, 2000).

### **Return and Repeat Migration**

Workers who have just migrated are very likely to move back to their original location (generating *return migration* flows), and are also very likely to move onward to still another location (generating *repeat migration* flows). In the United States, the probability of an interstate migrant returning to the state of origin within a year is about 13 percent, while the probability of a migrant moving on to yet another state is 15 percent (DaVanzo, 1983).

Unless economic conditions in the various states change drastically soon after the migration takes place, the high propensity of migrants to move again is not consistent with the simple human capital model summarized in equation (1). Prior to the initial migration, the worker's cost-benefit calculation indicated that a move from region  $i$  to region  $j$  maximized the present value of lifetime earnings (net of migration costs). How can a similar calculation made just a few weeks after the move indicate that returning to  $i$  or perhaps moving on to region  $k$  maximizes the worker's income?

Two distinct factors can generate return and repeat migration flows. The worker might learn that the initial decision was a mistake. After all, a worker contemplating a move faces a great deal of uncertainty about economic conditions in the region of destination. Once he migrates, he might discover that the available economic opportunities are far worse than what he expected to find. Return and repeat migration flows arise as workers attempt to correct their errors.

Return or repeat migration might also be the career path that maximizes the present value of lifetime earnings in some occupations, even in the absence of any uncertainty about job opportunities in different locations. Some workers might find that a brief experience with a particular employer in a different city provides a "stepping-stone" to better job opportunities in

the future. In other words, the temporary stay in region  $j$  is but one rung in the career ladder that maximizes lifetime earnings.

### **Family Migration**

The discussion has focused on the behavior of a single worker as he or she compares employment opportunities across regions and chooses the location that maximizes the present value of lifetime earnings. Most migration decisions, however, are not made by single workers, but by families. The migration decision, therefore, should not be based on whether a particular member of the household is better off at the destination than at the origin, but on whether the family as a whole is better off (Mincer, 1978).

Suppose that the household is composed of two persons, a husband and a wife. Let  $\Delta PV_H$  be the change in the present value of the husband's earnings stream if he were to move geographically from region  $i$  to region  $j$ —net of migration costs. And let  $\Delta PV_W$  be the same change for the wife. If the husband were single, he would migrate if the “private gains”  $\Delta PV_H$  were positive. If the wife were single, she would migrate if  $\Delta PV_W$  were positive.

The family unit (that is, the husband and the wife) will move if the net gains *to the family* are positive, or if  $\Delta PV_H + \Delta PV_W > 0$ . The optimal decision for the family unit is not necessarily the same as what is optimal for a single person. Suppose, for example, that the wife would move on her own if she were single, for she gains from the move (that is,  $\Delta PV_W > 0$ ), but that the husband's loss exceeds her gain (so that  $\Delta PV_H + \Delta PV_W < 0$ ). Hence it is not optimal for the family to move. The wife is, in effect, a *tied stayer*. She will sacrifice the better employment opportunities available elsewhere because her husband is much better off in their current region of residence.

Similarly, consider the situation where the husband experiences an income loss if he moves on his own (so  $\Delta PV_H < 0$ ). Nevertheless, when he moves as part of a family unit, the wife's gain exceeds the husband's loss (or  $\Delta PV_H + \Delta PV_W > 0$ ), and it is optimal for the family to move. The husband is a *tied mover*. He follows the wife even though his employment outlook is better at their current residence.

The analysis suggests that marriage deters migration because a person's private gains may be outweighed by the spouse's losses. The analysis also suggests that migration need not "pay" for all workers in the family. A comparison of the pre- and post-migration earnings of tied movers would indicate that migration reduced their earnings. The family, however, is better off.

## **International Migration**

There was a resurgence of immigration in the United States and in many other countries at the end of the twentieth century. By the year 2000, about 140 million persons—or roughly 2 percent of the world's population—resided in a country where they were not born. Nearly 6 percent of the population in Austria, 17 percent in Canada, 11 percent in France, 17 percent in Switzerland, and 10 percent in the United States was foreign-born.

Different sets of concerns have motivated economic research on internal and international migration. For the most part, the internal migration literature has examined the determinants of migration—who moves and where. In contrast, the international migration literature has been concerned with the issues that propel the debate over immigration policy. In particular, what is the economic impact of international migration on the *host country*?

### **Assimilation and Cohort Effects**

The impact of immigration on the host country depends on how the skill distribution of immigrants compares to the skill distribution of the native-born population. A great deal of research attempts to document trends in the skill endowment of the immigrant population, and how that skill endowment adapts to economic and social conditions in the host country through the process of assimilation.

Early studies in this literature used cross-section data sets to trace out the age-earnings profiles of immigrants and natives (Chiswick, 1978). A cross-section survey allows us to compare the current earnings of newly arrived immigrants (measured as of the time of the survey) with the current earnings of immigrants who migrated years ago. It was typically found that the earnings of newly arrived immigrant men were substantially lower than the earnings of native-born men. In contrast, immigrants who had been in the host country for two or three decades earned more than native workers.

These findings were typically interpreted as follows. When immigrants first arrive in their destination, they lack many of the skills valued by host-country employers, including language, educational credentials, and information on what the best-paying jobs are and where they are located. As immigrants learn about the host country, their human capital grows relative to that of natives, and economic assimilation occurs in the sense that immigrant earnings begin to converge to the earnings of natives. Immigrant earnings could eventually surpass native earnings if immigrants are positively selected from the population of the source countries. The cross-section evidence thus seemed to indicate that upward mobility was an important aspect of the immigrant experience in many host countries.

This interpretation draws inferences about how the earnings of immigrant workers evolve over time from a single snapshot of the population. Suppose, however, that today's newly arrived immigrants are inherently less skilled than those who arrived twenty years ago. The poor economic performance of recent arrivals may then indicate that the newest immigrants have few skills and poor economic potential *and will always* have low earnings, while the economic success enjoyed by the earlier arrivals may indicate that the earlier waves were always better skilled and had greater economic potential. Because of these intrinsic differences in skills across immigrant cohorts, one cannot use the current labor market experiences of those who arrived twenty or thirty years ago to forecast the future earnings of newly arrived immigrants (Borjas, 1985).

In short, a cross-section survey yields an incorrect picture of the assimilation process if there are skill differentials among immigrant cohorts at the time they entered the host country. These "cohort effects" can be generated by shifts in immigration policy, by changing economic conditions in the host and source countries, and by selective out-migration of immigrants in the host country.

Many studies, using either longitudinal data or repeated cross-sections, have calculated the rate of economic assimilation and measured the importance of cohort effects in immigrant-receiving countries (see the survey in Borjas, 1994). The findings typically differ across countries. In the United States, the immigrant waves that entered the country in the 1980s and 1990s were relatively less skilled than the waves that entered in the 1960s and 1970s. Immigrants in the United States also experience some economic assimilation.

Many of the international differences in the skill endowment of the immigrant population and in the rate of economic assimilation are probably due to differences in immigration or adaptation policies. The existing research, however, does not examine this relationship.

### **Labor Market Impact of Immigration**

The entry of immigrants into a particular labor market should lower the wage of competing workers (workers who have the same types of skills as immigrants), and increase the wage of complementary workers (workers whose skills become more valuable because of immigration). For example, an influx of foreign-born laborers into a particular locality reduces the economic opportunities for laborers who already live in the locality—all laborers now face stiffer competition in the labor market. At the same time, highly skilled natives may gain substantially. They pay less for the services that laborers provide, such as painting the house and mowing the lawn, and natives who hire these laborers can now specialize in producing the goods and services that better suit their skills.

In many host countries, immigrants cluster in a limited number of geographic areas. Many empirical studies exploit this fact to identify the labor market impact of immigration by comparing labor market conditions in “immigrant cities” with conditions in markets untouched by immigration (Card, 1990; Altonji and Card, 1991). These studies typically correlate some measure of economic outcomes for native workers with a measure of immigrant penetration in the locality and often report a weak “spatial” correlation. The evidence is often interpreted as indicating that immigration has little impact on the labor market opportunities of the native-born.

The “short-run” perspective that frames this type of research can be very misleading. Over time, natives who live in the immigrant cities—as well as natives who live in other cities—

will likely respond to the entry of immigrants. It is not in the best interest of native-owned firms or native workers to sit still and watch immigrants change economic opportunities. All natives now have incentives to change their behavior to take advantage of the altered economic landscape.

For instance, native-owned firms see that cities flooded by less skilled immigrants tend to pay lower wages to laborers. Employers who hire laborers will want to relocate to those cities, and entrepreneurs thinking about starting up new firms will find it more profitable to open them in immigrant areas. The flow of jobs to the immigrant-hit areas helps cushion the adverse effect of immigration on the wage of competing workers in these localities.

In addition, laborers living in areas not directly affected by immigration might have been thinking about moving to the cities penetrated by immigrants *before* the immigrants entered the country. They will now choose to move elsewhere. And some native-born laborers living in the immigrant cities will seek better opportunities elsewhere.

The internal migration of native workers and firms within the host country, in effect, can accomplish what the immigrant flow, with its tendency to cluster in a small number of gateway localities, did not—a “spreading out” of the additional workers over the entire nation, rather than in just a limited number of localities. A spatial comparison of the employment opportunities of native workers in different localities might show little or no difference because, in the end, immigration affected *every* city, not just the ones that actually received immigrants.

Because local labor market conditions may not provide valuable information about the economic impact of immigration, some studies have attempted to measure the impact at the level of the national market (Borjas, Freeman, and Katz, 1997). The “factor proportions approach” compares the host country’s actual supplies of workers in particular skill groups to those it would

have had in the absence of immigration, and then uses outside information on labor demand elasticities to calculate the wage consequences of immigration. Suppose, for instance, that in the absence of immigration there would be one unskilled worker per skilled worker. Immigration may change this factor proportion so that there are now two unskilled workers per skilled worker. Such a change in factor proportions should widen the wage gap between skilled and unskilled workers. During the 1980s and 1990s, the immigrant flow in the United States was relatively less skilled. As a result, the factor proportions approach implies that immigration had a sizable adverse impact on the relative wage of native-born workers at the bottom of the skill distribution.

The factor proportions approach is unsatisfactory in one important sense. It does not estimate the impact of immigration on the labor market by *directly* observing how this shock affects some workers and not others. Instead, the approach *simulates* the impact of immigration at the national level. For given labor demand elasticities, the factor proportions approach mechanically predicts the relative wage consequences of shifts in supply. The results, therefore, are sensitive to the assumptions made about the value of the elasticity that links changes in relative wages to relative supplies.

### **The Gains to the Host Country**

It is simple to describe how the host country benefits from immigration in the context of the “textbook model” of a competitive labor market. Consider the standard supply-demand analysis presented in Figure 1. The supply curve of labor is given by  $S$  and the demand curve for labor is given by  $D$ . For simplicity, suppose that the labor supply curve is inelastic, so that there are  $N$  native-born workers. A competitive market equilibrium implies that the  $N$  native workers are initially employed at a wage of  $w_0$ .

Each point on the labor demand curve gives the value of marginal product of the last worker hired (see *Demand for labor*). As a result, the area under the demand curve gives the total product of all workers hired. Hence the area in the trapezoid  $ABNO$  measures the value of national income prior to immigration.

Suppose that immigrants enter the country and that, in the short run, the capital stock remains fixed so that the demand curve does not shift. If we assume that immigrants and natives are perfect substitutes in production, the supply curve shifts to  $S'$  and the market wage falls to  $w_1$ . National income is now given by the area in the trapezoid  $ACMO$ . The figure shows that the total wage bill paid to immigrants is given by the area in the rectangle  $FCMN$ , so that the increase in national income accruing to natives is given by the area in the triangle  $BCF$ . This triangle is the *immigration surplus*, and measures the increase in national income that occurs as a result of immigration and that accrues to natives.

Why does the host country benefit? Because the market wage equals the productivity of the *last* immigrant hired. As a result, immigrants increase national income by more than what it costs to employ them. Put differently, all the immigrants hired except for the last one contribute more to the economy than they get paid.

The simulation of this model for the United States suggests that the net benefit from immigration is quite small (Borjas, 1995). If a 10 percent increase in supply lowers the wage by 3 percent, the immigration surplus is on the order of .1 percent of GDP. This small net gain, however, disguises the fact that there may have substantial wealth transfers from native-born workers to the capitalists who employ the services that immigrants provide.

Immigration alters labor market conditions in both the host and source countries. Moreover, the immigrant population in the host country often makes large financial transfers, or

remittances, to family members left in the source country. These remittances can have a substantial impact on economic activity, particularly in developing source countries. The impact of international migration flows on the source countries have not been studied systematically.

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**Figure 1. The Benefits from Immigration to the Host Country**