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Four Irresistible Forces for Increased Labor Mobility

Four irresistible forces today cause observed increases in labor mobility—and each promises to become even more powerful in the future. These forces are wage gaps, demographics, "everything but labor" globalization, and the services future of labor demand in industrial countries. A fifth force—rapid and massive shifts in the desired populations of various countries—has the next chapter to itself. Four preliminary observations are useful:

—The current differences in unskilled wages, or wages adjusted for skill, are more than twice as large as those that set the world in motion in the late nineteenth century. This wide divergence of the incomes of the poorest and richest countries has created enormous wage gaps for both skilled and unskilled labor, and the migration pressure in these gaps is almost certain to increase.

—A fundamental principle of economics is that differences create opportunities for exchange. The rich countries, particularly the European nations and Japan, have embarked on a historically unique demographic trajectory of increased longevity and fertility rates below the level of population replacement. During the next half century, this will produce ratios of the retiree-age population to the labor force–age population unlike those ever experienced. At the same time,

these countries' geographic neighbors are projected to have large and growing populations of youth. This difference in potential labor will produce another irresistible force for increased labor mobility.

—Unlike the first era of globalization, the post–World War II era has been an experiment in "everything but labor" globalization. But once everything else is global—communications, financial flows, ideas, goods—the losses from cross-border mobility to the mover become smaller and the gains from increased labor movements become more and more obvious—and less and less possible to resist.

—The gains in employment in rich countries are increasingly in service sectors that are "hard-core" nontradables—for example, personal services like haircuts and home health care and truck driving. Although "outsourcing" as a new phenomenon has received the lion's share of attention in recent years, I argue that it will remain quantitatively much smaller than the services that require physical presence.

Irresistible Force One: Large and Increasing Wage Gaps across Countries

Although people make complex choices about where to move that depend on many social, cultural, and familial factors, if all else is equal, an increase in the gap between what people earn where they are now and what they could earn by moving increases the *pressure* for mobility. With sufficiently low incomes, people may not be able to afford to move so that increased gaps—particularly if they result from falling incomes of the poor—may not result in increased mobility. This may also mean that decreases in the wage gap as a result of increases of the incomes of the poorest countries may actually result in greater realized labor mobility.

However, before addressing that complication, let us review evidence of three types, which lead from the familiar (differences in income across countries) to the relevant (gaps in wages for the same worker across countries, adjusted for education and skills). First, the massive historical increase in the *income* gap between rich and poor countries means that the gaps in income *across* countries are now much larger than gaps *within* countries. Second, massive income gaps could potentially reflect differences in capital or rents to resources rather than wages, but the current gaps in unskilled wages (either in nominal terms or adjusted for purchasing power) between many potential immigrant-sending and -receiving countries are substantially larger today than in the "age of mass migration." Third, income or wage differences across regions create mobility to the extent that people can change their earnings

by moving. It is possible that cross-national differences in wages are entirely explained by cross-national differences in worker characteristics, such as education, and hence are irrelevant for worker mobility. But, in fact, nearly all of the earnings gap between workers in poor countries and rich countries appears to be due to their *location,* not their personal characteristics.

Divergence and Income Gaps across Countries

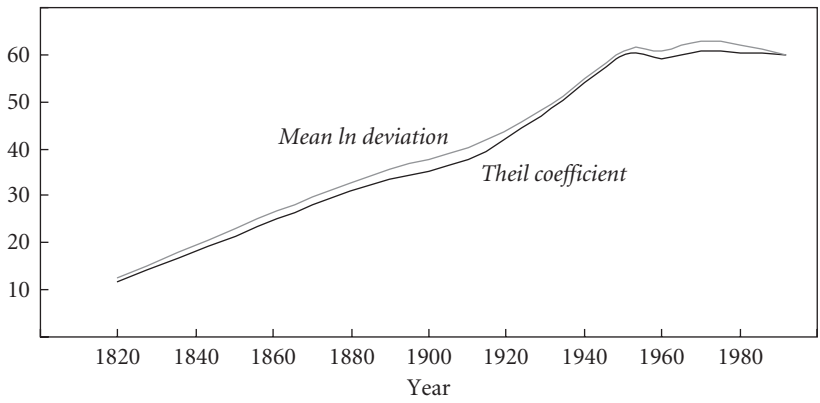
The typical person in a rich industrial country lives better in *material* terms than any king or duke or the wealthiest financier in 1820 or even 1870.[1] The suburban chariot—the ubiquitous minivan—provides safer, faster, and more comfortable travel than the grandest carriage ever built. Cellular telephone owners can pull from their pocket a device that can communicate more quickly and reliably with any corner of the globe than anything available to the most powerful world leader in 1900. Nearly every house in the developed world has flush toilets connected to an amazing system of waste treatment and disposal that eliminates the stench and disease that afflicted even the wealthiest in the nineteenth century. In the age of digital recordings, people have access to a wider variety of better-performed music anywhere they travel than the richest of courts could ever provide. Health conditions have improved enormously so that nearly every child in the industrial world is born with a better chance to reach adulthood than the richest could achieve.[2]

This enormous transformation has been brought about by the gradual, but cumulatively explosive, improvement of material well-being in those countries at the top of the world distribution of income. According to conventional measures, output in most of the currently industrial countries has grown steadily at about 2 percent a year at least since 1870—so that today average incomes are ten to fifteen times higher (Maddison 1995). However, not all countries have participated in this growth. In many countries, incomes are still very low—not only lower than those of the industrial countries today but also lower than the industrial countries' level in 1870. The combination of steady growth at the top with many countries lagging at the bottom has

1. I emphasize "material" because there are many ways in which the human condition is unchanged or has changed for the worse. I am not convinced people are nobler, braver, more moral, or imbued with a deeper artistic and sense of the humane today than historically (and I am convinced I personally do not possess these compared with persons in the past in the relative abundance that I possess better lawn mowers). Moreover, while science has progressed, the loss of metaphysical certainty and the concomitant sense of personal security and social identity have both pluses (more tolerance of deviation) and minuses.

2. Not only do I not have to worry about infectious diseases and epidemics, but genetic defects that are easily operable today would have killed the children of even the most favored.

Figure 1-1. *Inequality in Incomes over Time, Showing Trend from Differences of People within Countries and Differences across Countries, 1800–2000*



Source: Bourguignon and Morrison 2002.

caused a historical "divergence big time" (Pritchett 1997). The ratio of incomes between the top and bottom countries has increased from 10 to 1 in 1870 to something like 50 to 1 today.

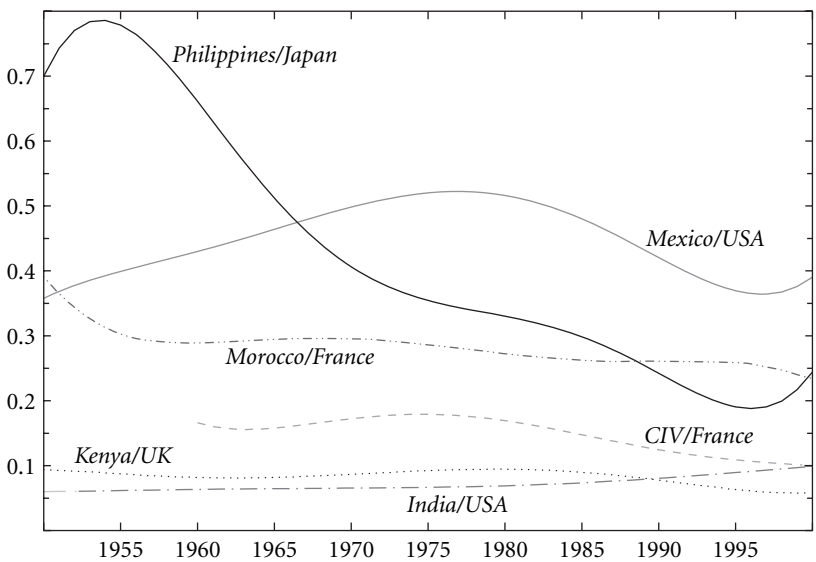
Bourguignon and Morrison (2002) have undertaken the heroic exercise of examining the evolution of the *personal* distribution of income over a very long time scale. Their estimate is that in 1820 only about 10 percent of the differences in incomes among all individuals in the world were due to differences in average incomes across countries.[3] In 1820 it did not really matter that much whether one was a peasant in England, India, or Ethiopia—life was hard, and the gap *within* each country between the rich and poor was substantial. But most of the inequality in the world today is because of differences in incomes across countries, because the fraction of the world's income inequality that is accounted for by differences *across* countries has grown from 10 to 60 percent and remained at this level (figure 1-1).[4]

3. Actually, due to the lack of availability, they divide the world up into groups of countries. The "across"-country gap would be even larger for actual countries.

4. According to their calculations, this ratio has held steady in recent periods, which, because their estimates are of the personal distribution of income and hence are population weighted, is consistent with the rapid growth in China and India (Sala-i-Martin 2002).

This gap in incomes across countries has, in most regions of the world, continued to grow rather than shrink. While the two largest countries, India and China, have grown faster than the average for countries belonging to the Organization for Economic Cooperation and Development (OECD) and hence converged on the leaders, many countries have seen the gap between their income and that of the leaders grow larger in recent decades. This growing gap is a feature of many bilateral relationships between potential immigrant-recipient and -host countries. Figure 1-2 shows the evolution of the ratio of per capita gross domestic product (GDP; this time, in exchange rates adjusted for purchasing power parity, or PPP, so the ratios are much higher but unaffected by trends) between various pairs of countries linked by proximity or historical or cultural ties. Mexican output per person peaked at 50 percent of the U.S. level but fell back to about 40 percent, where it had been

Figure 1-2. *Evolution of the Ratio of Per Capita Gross Domestic Product (GDP) between Pairs of Countries Linked by Proximity or Historical or Cultural Ties, 1955–2000*[a]



Source: Author's calculations with Penn World Tables 6.0 data on per capita gross domestic product. Ratio is smoothed with a cubic.

a. GDP is in exchange rates adjusted for purchasing power parity, or PPP.

in the 1950s. The Philippines' output per person has fallen from almost 80 percent of Japan's output in the post–World War II period to about 30 percent today. Morocco's output per person has fallen gradually, but steadily, to only 25 percent that of France. Note that while the largest country, India, is booming, its level of output per person has reached only 10 percent that of the United States—and a fourth that of Mexico.

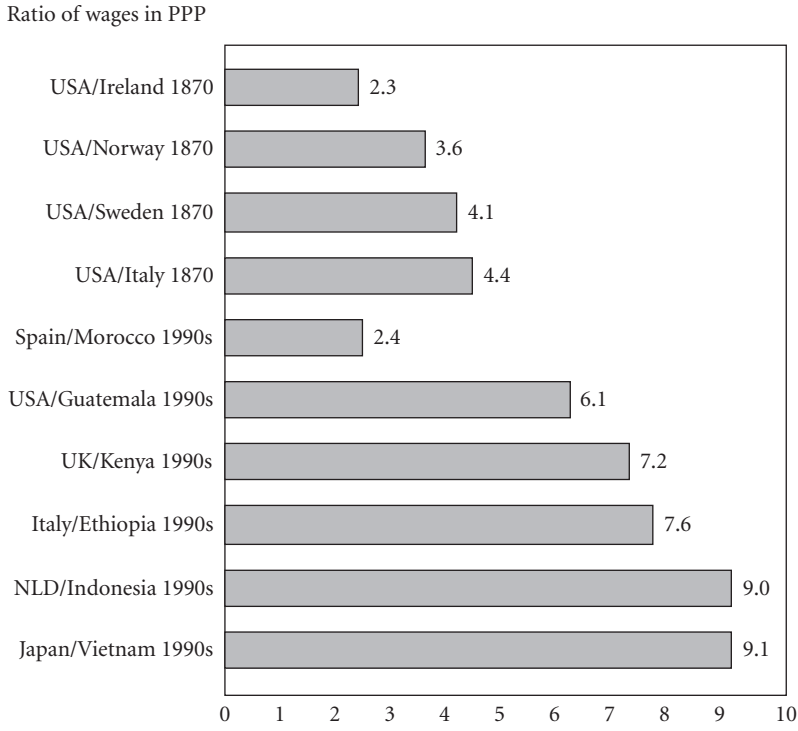
Gaps in Wages

Gaps in income per capita across countries are only suggestive of migration pressures, because the relevant question for a worker is the difference in wages that he or she would earn in the two countries. We will start looking into this with cross-national differences and then move to direct comparisons. Using a recent data set on wages and hours in the industrial sector across countries (Rama and Arcetona 2002), one can create comparisons of wages per hour in industry across countries. Unadjusted for PPP, wages differ enormously between the OECD countries and the low-wage countries near the OECD countries. In these data from the late 1990s, wages in Japan are $13.32 an hour, compared with 13 *cents* an hour in Vietnam—a ratio of 100 to 1. Wages in the United States are $13.64 an hour, versus 76 cents an hour in Guatemala, a gap of 18 to 1. Even comparing an OECD country like Spain with a middle-income country like Morocco, industrial wages differ by a factor of 7 (figure 1-2).

Comparing wages at official exchange rates is not the right comparison for considerations of labor movement, for two reasons. First, prices tend to be lower in poorer countries, and hence official exchange rates overstate differences in the value of consumption from an hour's wage for a worker. Second, moreover, comparing the "industrial sector" across two countries' workers is problematic because the countries' sectors differ in composition and skills. Because the PPP calculations often seem opaque, a simple example helps illustrate the realities of the comparison of wages based on their purchasing power in command over consumer goods. How many minutes of a construction laborer's work are required to purchase a kilogram of wheat flour? While an American construction laborer works less than 4 minutes to earn enough to buy a kilogram of flour, it takes a Mexican worker more than 1 hour and an Indian construction worker just under 2 hours.

What do the fully corrected PPP comparisons suggest are the wage gaps across potential migration partners? And how would we know if these gaps are "big enough" to overcome the many frictions to labor movement? It is well known that in the period of open migration in the nineteenth and early twentieth centuries there was massive labor mobility. Though it is difficult to make

Figure 1-3. *Ratios of Wages of Immigrant-Sending and -Destination Partners during the Era of Mass Migration Compared with the Ratios of Wages of Potential Sending and Destination Partners Today*[a]



Sources: O'Rourke and Williamson 1999 (wages in 1870); Rama and Arcetona 2002 (wages in 1990s).

a. Ratios of wages adjusted for purchasing power parity, or PPP, of the United States and its migration partners in 1870 and pairs of countries in the 1990s.

real wage comparisons,[5] it appears that the wage differentials that set in motion the mass migrations in the late nineteenth century are substantially smaller than the current gaps in real wages between potential migration partners. Figure 1-3 compares the ratios of PPP-adjusted wages of immigrant-sending

5. We are comparing the O'Rourke and Williamson (1999) real wages of unskilled laborers—often taken from data on the building trades and adjusted for prices—with the wages in all the industrial sectors in the 1990s adjusted for purchasing power parity (PPP) using the price levels from the Penn World Tables 6 (http://pwt.econ.upenn.edu/). There are many reasons why these two—historical data on wages of unskilled laborers and current data on industrial wages adjusted for PPP—are not perfectly comparable.

(Ireland, Italy, Sweden, Netherlands) and the United States partners during the era of mass migration with the ratios of wages adjusted for PPP of potential sending and destination partners today. The wage ratios between Japan and Vietnam (9.1 to 1), the United Kingdom and Kenya (7.2 to 1), or the United States and Guatemala (6.1 to 1) are substantially larger today than the historical ratios between the mass senders and the United States (Ireland, 2.3 to 1; Sweden, 4.1 to 1). In many ways, figure 1-3 is central: We know that the wage gaps in the late nineteenth and early twentieth centuries were sufficient to set the world in motion in an era of open borders. Yet the real wage gaps today across countries dwarf those of the era of mass migration.

What Do Migrants Earn When They Move?

Wage differences create pressures for labor mobility to the extent that they reflect differences in earnings potential for the same individual. The existing literature suggests that nearly all the differences in wages between individuals in rich and poor countries are explained by the *location* of the worker, not their personal characteristics. When workers move, their earnings look much more like the earnings of workers in the country they move to than where they moved from.

Thousands of empirical studies of the determinants of individual earnings have established that individual characteristics like education, labor market experience, physical strength, and even birth weight correlate with earnings. But on reflection, two points are obvious. First, given the magnitudes of these estimated effects *within* national labor markets, these forces can explain only a tiny fraction of observed wage gaps *across* countries. That is, given the simple Mincer earnings specification that schooling increases earnings proportionately and that the wage increment to a year of education is something like 10 percent,[6] then the ratio of the wage of a person with twelve years of schooling to someone with only six years (a primary education) is 1.8—compared with the national wage ratios in industry (which almost certainly substantially understate average national wage gaps overall) of 6 or 9 to 1. So whereas some of the wage gaps are explained by differences in observed individual characteristics, the differences in observed characteristics and the gaps these cause in national labor markets cannot come close to explaining the differences across nations.

Second, when wages are compared by educational level, then wages of immigrants look quite similar to those of natives with a similar education—and completely different from those with the same education in their coun-

6. This is near the average of the existing empirical studies (Pritchett 2004b).

try of origin. Table 1-1 presents just one illustrative example, comparing earnings of Salvadorans in El Salvador and in the United States. The ratio of wages of Salvadoran male workers with a secondary degree in the United States is *exactly* the same as the average for the U.S. population, whereas it is 8.5 times higher (unadjusted for PPP) than for workers with the same degree in El Salvador. This is just confirming the obvious, which is that the U.S. and Salvadoran labor markets are integrated within borders, so that equivalent workers make the same amount, while they are sharply separated by national borders, so that *equivalent* workers on different sides of the border can make completely different amounts.

More telling still, recent data on the earnings of migrants before and after migrating show that when they move, their wages are almost identical to those of workers in the country they move *to* and almost nothing like those in the country they move *from.* Jasso, Rosenzweig, and Smith (2003), using data on worker earnings before and after immigration to the United States, show an increase of $17,000 to $37,989 (in PPP) *for the same worker*—or, in other words, wages nearly double just by moving across the border.[7]

This is not to argue that new workers make immediately 100 percent of what equivalently educated and trained native workers make. There is a large economic literature on how quickly the wage gap between immigrant and native worker closes (if at all). The older conventional wisdom was that wage gaps closed almost entirely quite quickly, but this is being challenged by newer studies that find more persistent gaps, particularly with some ethnic groups. But by using data only from the host country (for example, the United States), one can easily miss the point about labor mobility pressures. That is, suppose that wages of workers with less than a high school education converged to only 80 percent of those of native workers with the same level of schooling. Though these may be interesting for a number of reasons for economic and social conditions in the United States, it still may be true according to simple

7. Of course, this still does not account for the fact that migrants are self-selected and hence the income gains might be overstated as more ambitious or able people move, so even comparing the wage before and after may overstate the gains of moving the "typical" worker. A study using a lottery for Tongans moving into New Zealand (McKenzie, Gibson, and Stillman 2006) found that (1) comparing wages in the two countries overstated the income gains, and (2) in fact the "before and after" overstated the "true" income gains. But the "true" pure income gains estimated using the "natural experiment" of a lottery was a 263 percent gain for the Tongans who moved. Of course, whether this "experimental" estimate of the gains of moving a typical Tongan or the observed "before and after" is relevant depends on whether one is interested in local average treatment effects (relevant if the current system expands at the margin so the incremental migrant is self-selected) or some average treatment effect (relevant only if one were going to allow a lottery to determine movement or a nonmarginal expansion).

Table 1-1. *Earnings of Salvadorans with Equivalent Levels of Education in the United States and in El Salvador*

		Average annual earnings of male workers (dollars)		*Ratios of earnings of those workers*	
Level of education	*Average annual earnings of male workers aged 25 to 40 in El Salvador (dollars)*[a]	*Salvadorans in U.S*	*U.S. average*	*Salvadorans in El Salvador / Salvadorans in U.S.*	*Salvadorans in U.S./ U.S.average*
None	2,289	16,686	10,243	7.3	1.6
Completed primary school	1,263	18,529	7,106	14.7	2.6
Completed secondary / high school degree	2,669	22,611	22,087	8.5	1.0
University degree	9,246	27,893	38,363	3.0	0.7

Sources: Calculations from 2000 U.S. Census; 2002 Encuesta de Hogares de Propositos Multiples (National Household Survey) for wages in El Salvador.

a. 2002 dollars not adjusted for purchasing power.

arithmetic that movers have enormously higher wages in the United States than in their home country. Just using round numbers, if wages for unskilled labor are $10 an hour in the United States and $2 an hour (adjusted for PPP) in another country, then even if newcomers only ever make 80 percent of the U.S. level, the wage is $8 an hour, which is four times higher than wages in the country of origin, something that can never be revealed using only U.S. wage data comparisons.

Gaps as a Force for Migration

The gaps between what workers make in one country and another is clearly an irresistible force impelling greater labor mobility across national boundaries. The migrations from Europe to the areas of recent settlement—the United States, Canada, and Australia, as well as Argentina and Brazil—in the

era of open migration (among these countries) are well documented. In the forty years from 1870 to 1910, labor flows were truly massive for the receiving countries and for some (but not all) of the sending countries. The increase in the size of the labor force due to migration was 21 percent for the United States, 40 percent for Australia and Canada, and 80 percent for Argentina. Conversely, the cumulative impact of migration was to *decrease* the size of the labor force in Norway and Sweden by respectively 22 and 18 percent, in Italy by 29 percent, and in Ireland by 41 percent (table 1-2).

Workers who are "unskilled" by rich-country standards, that is, who have little education, can earn enormously more by working in a rich country than in nearly any poor country. The wage gaps in the world today are at historically high levels. The massive migrations of the nineteenth century were propelled by wage differentials between sending and recipient countries of between 2 to 1 (United States / Ireland) and 4 to 1 (United States / Italy, United States / Sweden). Today there are PPP-adjusted differences among workers in

Table 1-2. *Migration in the Era 1870–1910*[a]
Percent

Country	*Adjusted net migration rate labor force*	*Adjusted cumulative impact on the labor force*
Argentina	13.95	75
Canada	8.22	39
Australia	7.85	37
United States	4.78	21
Belgium	1.98	8
Brazil	0.88	4
France	−0.12	0
Germany	−0.86	−3
Netherlands	−0.71	−3
Portugal	−1.26	−5
Spain	−1.38	−5
United Kingdom	−2.67	−10
Denmark	−3.2	−12
Sweden	−4.99	−18
Norway	−6.24	−22
Italy	−8.54	−29
Ireland	−13.35	−41

Source: Hatton and Williamson 1998.
a. Migrants as a fraction of population based on per 1,000 migrants per year in the labor force.

the industrial sector between potential sending and recipient countries (based on geographic proximity or historical ties) of 6 to 1 (United States / Guatemala), 7 to 1 (United Kingdom / Kenya), or even 9 to 1 (Japan/Vietnam).[8] If a wage gap of 4 to 1 between the United States and Italy in 1870 was sufficient to create a migration that reduced population by 30 percent over a forty-year period[9]—even when transport costs were higher, travel was more dangerous, and communication with loved ones left behind was much more expensive and less reliable—then it is at least plausible that the existing wage differences indicate potential forces for substantially larger labor movements than those currently observed.

There are two major caveats to this use of the gaps in wages as an index of the irresistible force for migration, both of which are important but neither of which undermines the basic message of large and increasing labor movements. First, there is a distinction between the *pressure* for labor movements and the *propensity* to move. Though the *pressure* for migration might be a monotonic function of the gap in a worker's wages between two locations, the *propensity* to migrate depends on the worker's ability to actually undertake a long-distance move. If there are large fixed costs to migration and borrowing to finance these costs is costly or impossible to arrange, then the poorer and destitute cannot afford to move (Faini 2001). Much, though not all, of the empirical literature examining actual movements within and across countries, and using the historical data (Hatton and Williamson 2006), is consistent with the view that the propensity to migrate at first *rises* with rising income. As incomes increase from very low levels, more people are able to respond to the pressure for movement and actually move.

8. As large as these differences are, there are two ways in which they likely *understate* the relevant comparison for many migrants, for three reasons. First, these are comparisons between industrial workers in both locales and hence probably understate the average wage gaps economywide as workers in agriculture or informal services in developing countries make much less than industrial workers, a gap that is much smaller in a developed economy. Second, even the adjustment for PPP is not enough; and even if PPP wages were equal, the worker in the poor country has a "better" lifestyle in material terms. Comparisons of nonmoney measures of well-being (health, education) or of food share, however, do not suggest that the PPP comparisons are wildly wrong, as the nonmoney metric indicators suggest lower standards of living for the relatively well off in poor countries than for the poor in rich countries (Pritchett 2006). Third, adjusting wages for PPP assumes that the relevant prices are in the country in which the wage is earned—but if a worker is remitting, say, a third or half of his or her income for consumption of household or family members at home, then part of the wage is buying consumption at the lower prices of the country the worker comes from and hence *household* utility is higher.

9. This also assumes similar ratios for other countries receiving Italian migration.

How does the introduction of the *absolute level* of wages of the potential migrant as an additional factor in the pressure of a wage differential between locations in the overall propensity to migrate change the basic story? This obviously complicates scenarios for the future, for one now has to think of the effects of wage growth in potential sending countries both as it affects the threshold and as it affects the wage gap. For the poorer countries, where wage gaps are large, there are three scenarios. First, wages fall in absolute terms, which leads to an increase in pressure but reduces the capability to move. Empirically, this could go either way. Second, wages rise, but less than those in rich countries. In this case, the two effects reinforce each other as the slow wage growth gives more and more people the capability to move while the wage gap increases the pressure. Third, wages are rising more than in rich countries. In this scenario, it depends on the strengths of the two offsetting effects, but in poor countries the effect of rapid wage growth in giving more and more people the capability to move is likely stronger than the reduction in gap effect (as the gaps are very large) and hence could increase the propensity even as the pressure declines. The fact that the wage gap between Mexico and the United States (one of the world's largest bilateral migration flows) is substantially *smaller* than most other wage gaps (for example, much smaller than between India and the United States) suggests that income-induced pressures are bound to rise even with rising wages in most poorer countries—even those gaining on the leaders (table 1-3).

The fact that falling wages, say in Africa, could mean less pressure for migration as fewer people have the capacity to move is not an attractive long-run proposition, and there are two choices. The first is that this is a temporary phenomenon and wages will begin to rise again in Africa, which means that people will be crossing the threshold level of being able to afford migration in a future where wage gaps are even larger, which implies that the falling wages will only postpone the time for large migration pressures. Or second, Africa remains too poor to create substantial migration pressures forever—and the relative gaps get wider and wider—not a prospect to be desired by anyone.

The second caveat is that by emphasizing the role of wage differentials as one of the forces driving movements of persons, we do not want to suggest that all movement of people is economically motivated, and do not want to suggest a crude caricature of economics—that even those economically motivated decisions are determined exclusively by a desire to maximize current income. For instance, some sociologists, such as Douglas Massey, who have studied migration argue that many economic migrants have something like a "target accumulation" motivation—that is, their decision to move to a high-earnings labor market is not with the goal of remaining there but rather as a

Table 1-3. *Scenarios for Wage Growth in Poorer Countries and Implications for Pressure (Wage Gaps), Thresholds, and Propensity to Migrate*

Assumed wage growth in poorer country ($\dot{w}_{rich} \approx 2ppa$)	*Wage gap (pressure)*	*Wage gap currently large (> 4) or small (< 4)*	*Effect on propensity from crossing threshold*	*Net effect on propensity from pressure and threshold*
$\dot{w}_{poor} \leq 0$	Grows	Large	Reduces, big	+/− Propensity could decrease even as wage gap rises (for example, Africa)
		Small	Reduces, small	+/− Propensity likely rises as wage gap effect dominates (for example, in parts of eastern Europe)
$0 \leq \dot{w}_{poor} \leq \dot{w}_{rich}$	Grows	Large	Increases, big	+/+ Propensity increases from both forces (for example, Latin America)
		Small	Increases, small	+/+ Propensity increases from both forces (for example, in parts of eastern Europe)
$\dot{w}_{poor} \geq \dot{w}_{rich}$	Falls	Large	Increases, big	−/+ Propensity could rise even as wage gap falls as more people can afford to move (for example, in India)
		Small	Increases, small	−/+ Propensity likely falls as reduction on gap effect dominates (for example, in parts of eastern Europe)

Source: Author's calculations.

way of accumulating a stock of savings, perhaps for marriage, to buy a house or a piece of property, or to start a business in their home country. Given the variety of migrants from different countries and to different countries, coming from a variety of ages and family situations (some young and single, some married with children), it is plausible that "target accumulation" with return is a motivation for at least some migrants. If this is the case, then an increase in wage differentials might have complex effects on the flow and stock of migrants. The flow of migrants would almost certainly increase—as the number for whom either higher earnings or target accumulation is attractive rises—but the stock of foreign workers in the recipient country would not rise by as much as the flow, because the target accumulation would happen faster. It is even conceivable that the total stock would decrease, but I know of no particular evidence that this has ever been the case.

Irresistible Force Two: Differing Demographic Futures

A second irresistible force for increased labor flows is the radically different demographic futures implied by at least the current differences in birthrates. Nearly all European countries—some more rapidly and dramatically (for example, Italy and Germany) than others (for example, France and the United Kingdom)—are embarked on a truly remarkable demographic experience. The current UN population projections imply that the labor force of many European countries and Japan will not just cease to grow but decline in absolute terms by substantial amounts. Though national populations have stagnated or declined before due to excess deaths (for example, the Black Death) or out-migration (for example, Ireland), absolute population declines because people have decided to have fewer children than the replacement level are historically unique. The neighbors of Europe and Japan still have fertility rates well above replacement levels.

These differing demographic futures imply two things. First, the relative populations of regions will shift massively. Second, the changes in the labor-force-age population, and particularly the young population, will change even more dramatically, creating a "youth dearth" in some countries and a youth bulge in others.

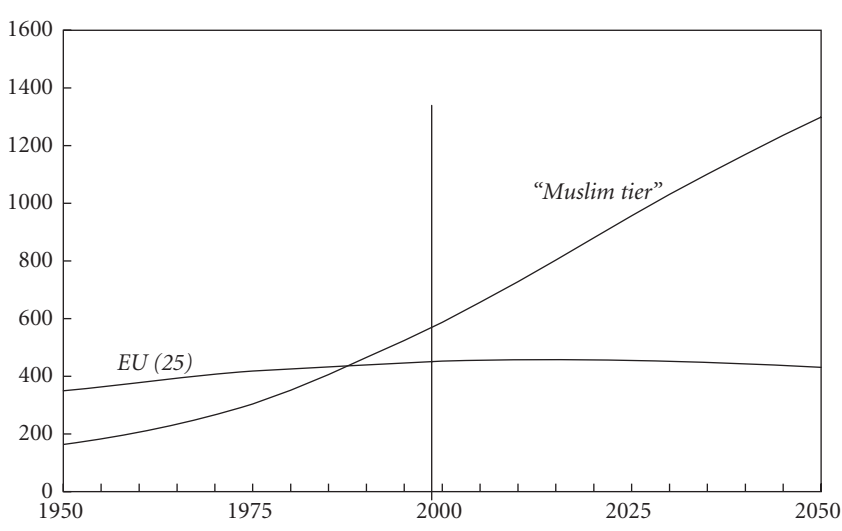
Evolutions of Population

The United Nations' latest projections of populations suggest that the labor-force-age (fifteen to sixty-four years) population of many European countries and Japan will be substantially smaller in the future. The populations of Germany, Japan, and Italy have already begun to shrink and, for Italy and Japan,

are projected to be only 60 percent of their 2000 size by 2050. France and the United Kingdom will remain roughly the same size during the next fifty years. Among large industrial countries, only the United States is expected to continue to experience sizable population growth (these projections already assume some level of migration).

Europe's neighbors, conversely, have not yet had similarly large shifts in fertility, and these differences imply enormously different demographic futures. In a recent paper, Demeny (2003) has illustrated the consequences of the current projections, particularly for Europe and its periphery. He compares the population of Europe (defined to include twenty-five countries in the broad definition of Europe) and that of its "Muslim tier" with the countries from North Africa to the Middle East to West Asia that surround Europe. In 1950 Europe had roughly twice the population of these neighbors (360 million compared with 180 million). Sometime in the late 1980s, these neighbors passed Europe's population, and by 2025 the tables will be completely turned and the Muslim tier will have twice the population of Europe. If one continues the projection to 2050, Europe's Muslim tier will have three times the population of Europe—1.2 billion to 400 million (figure 1-4).

Figure 1-4. *The Relative Populations of the European Union (25 Members) and Its "Muslim Tier," 1950–2050*

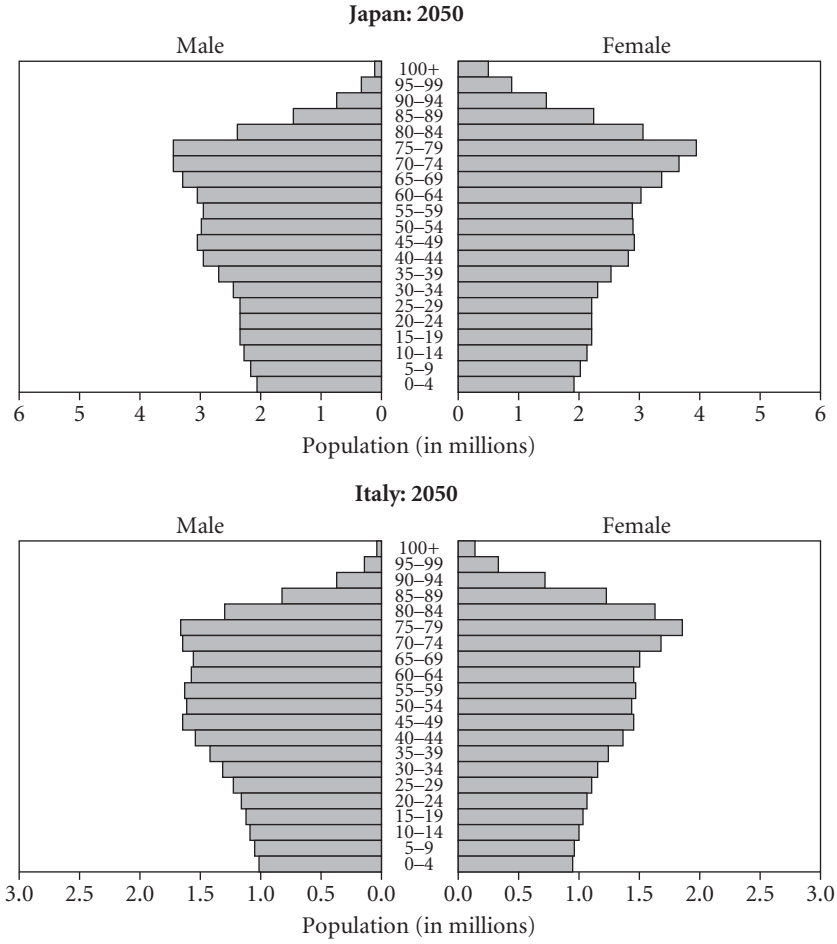


Source: United Nations Department of Economic and Social Affairs 2002 (Paul Demeny seminar slides)

Youth, and the Lack Thereof

What makes these demographic changes even more dramatic is what they imply for the age structure of the population. The population pyramids (the population in each age group) of European countries will "invert," so that instead of the traditional broad-based pyramid with more young than old, in the future the population pyramid will be standing on its tip. Figure 1-5 shows the population pyramid for two of the more dramatic examples: According to the projections in Italy, by 2050 there will be nearly *twice as*

Figure 1-5. *Projected Demographic "Pyramids" for Japan and Italy, 2050*



Source: U. S. Census Bureau, International Data Base.

many women age seventy-five to seventy-nine years as there are girls age zero to four—many more grandmothers than granddaughters. In Japan, there will be many more women over seventy than in the entire childbearing years.

This contraction in youth relative to the total population has several implications. The most obvious is for the financial viability of the current pension and social transfer schemes. The implications for the "support ratio" of labor-force age to the "retirement-age" population are staggering. Current projections show support ratios falling in Germany from 4 to 2, and in the more dramatic cases of Italy and Japan they fall to about 1.5—only 1.5 workers for every retiree. The systems of social transfers in Europe can be sustained only with very high tax rates even at *current* support ratios and program design parameters (which include a combination of tax rates, ages, benefits, and so on). But if support ratios fall to anything like projected levels, then it is not clear that there are politically feasible combinations of design parameters that can make the systems solvent—either tax rates need to be too high or retirement benefits drastically curtailed.

This is not to suggest that migration is *the* solution to the problems of an aging population. Suppose the projections for the rate of natural increase in the rich countries extend into the future: If the labor force increased sufficiently to keep support ratios constant at their current values, how large would the fraction of the labor force that was "foreign born" be in 2050? For Japan, well over half the population would be foreign born, and near half for Italy and Germany. It is very difficult to believe that these societies would allow anything like this level of labor mobility

A fundamental principle of economics is that differences create incentives for exchange. The enormous demographic differences between rich countries and their neighbors increasingly create incentives for labor flows.[10]

Irresistible Force Three: "Everything but Labor" Globalization

The third powerful force behind increased migration is that the world is becoming more connected in every other way—trade in goods, movements of capital, communications, travel. This creates two pressures for increased labor mobility. It lowers the relative cost of moving by making moving relatively less costly both in financial and psychic terms. In addition to lowering

10. One interesting fact, noted in Birdsall and Pritchett (2002), is that the implications for the United States are less dramatic than for Europe or Japan. Fertility has not fallen as rapidly or as far in the United States, and the demographic behavior of the "natural" immigration partners of the United States shows lower fertility rates than does that of the countries in proximity to Europe or Japan.

the costs to movers, on the policy level the question arises: If everything else is globalized, then why not labor?

The Costs of Being a Migrant Are Lower

The changes in the world resulting from globalization have also lowered the cost of being a migrant, in nearly every way. Most obviously, travel times are shorter, so there are fewer labor days forgone in traveling to and from work. Even in the late nineteenth century, when ships were the only form of travel and ocean passage took weeks, wage differentials and seasonal changes in labor created seasonal migrations, perhaps most famously in the *golodorinas* (swallows) who traveled back and forth from Italy to Argentina. Today, similar trips can be made in hours.

One of the costs of long-distance labor mobility is being out of touch with friends and family. Today, telephone calls make communicating with loved ones back home much easier. The international media, including the Internet, make staying in touch with events "back home" much easier. With freer movement of goods and lower transport costs, movers also no longer have to do without their favorite food, music, or clothing. Making remittances today is much easier (though the industry can still be high cost when competition is limited; see World Bank 2005a).

The literature on migration has documented the importance of "network" effects—that migrants are likely to move to a place where there already is a familial or ethnic connection. These network effects arise both from labor markets (because jobs are often found through personal connections) and also from the mitigation of the social and psychic costs of migration. It is clear that the slower but steady growth of labor movements and migration with the globalization of everything but labor creates an enormous momentum for greater migration. An initial enclave can create links that—through more complete connections of people, information, and finance—create the pressures for even greater migration. Though this was in evidence in historical migrations (Hatton and Williamson 2006), it likely operates even more effectively today.

Why Not Labor?

The international system has created a mechanism for negotiating reductions in trade barriers. Relative to its stated objectives, this has been enormously successful. One could argue that this international system is a victim of its own success and has created the conditions in which labor mobility must emerge on the global agenda. Winters and others (2002) have used a general equilibrium model to estimate gains from increased labor mobility. These calculations have two very important points, the magnitude and the distribution.

First, an expansion in labor mobility of the magnitude of 3 percent of the labor force in host (labor-importing) countries (an additional flow of around 16 million people) would lead to world welfare gains of $156 billion.[11] Although a smallish (0.6 percent) fraction of world GDP, this is larger by nearly a factor of *three* than annual official development assistance in the 1990s and substantially larger than the same model's estimate of the gains from *all* proposed remaining trade liberalization ($104 billion).[12] These estimates are, if anything, conservative.

The World Bank's *Global Economic Prospects* report for 2006 focuses on migration. It uses the Bank's standard general equilibrium model, LINKAGE, and estimates that for the same increase in the developed-country labor force (3 percent) the gain is more than twice as large, $356 billion, as the estimates by Winters and others (2002).[13] The exact calculations depend on assumptions about wage gaps between sources and hosts of movement and the modeling of labor markets, in particular how "subsititutable" domestic workers and movers are, but in the end some simple arithmetic dominates. If, as the Jasso, Rosenzweig, and Smith (2003) estimates suggest, each worker gains $17,000 a year from the move, then 16 million people times that amount represents an annual gain of $272 billion.

Moreover, these calculations are comparing a modest increase in labor mobility to all (further) trade liberalization. Hamilton and Whalley (1984) calculate that free migration could as much as *double* world income—which makes it very hard to stay motivated about the fractions of 1 percent that further trade liberalization can generate. These empirical results make intuitive sense. Goods markets are in fact quite deeply integrated, and though there are still gaps across countries in prices and evidence that the "border" effects inhibiting trade are still quite large, the price differences in goods across countries induced by restrictions on trade are very small relative to the observed wage gaps of as much as 10 to 1. Because, in the standard economic "triangle" calculations, the efficiency losses rise with the *square* of the distortion, further liberalization of trade (where distortions have been reduced) just cannot

11. The general equilibrium effects are small relative to the direct effects. Total gains are $156 billion, which is a gain of $170 billion for those who move offset by a loss of $14 billion for those who do not.

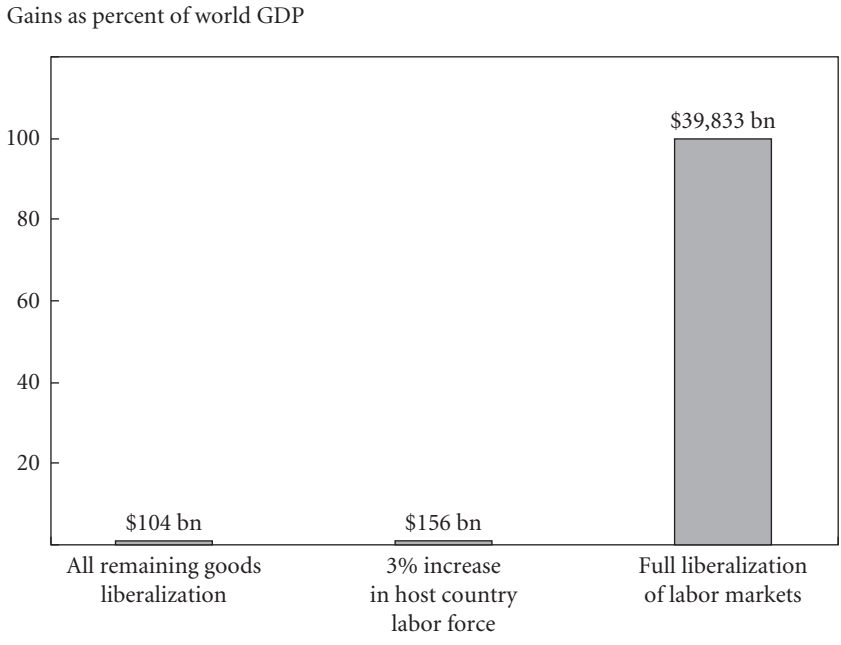
12. Of course, there are other estimates of trade liberalization that are larger, depending on what is assumed about the accomplished trade liberalization and what is included (for example, Cline 2005).

13. Few of these general equilibrium estimates allow for capital mobility, so they are general equilibrium in that they account for shifts in relative prices (including the price of skills) but not necessarily all dynamic changes.

compare to gains from even small relaxations of restrictions on labor. Though labor mobility remains off the agenda, it is increasingly difficult to make a compelling case for additional reductions to barriers to markets for *goods*. More simple arithmetic illustrates the similar calculation for development assistance: Moving someone from making $2 an hour (in PPP) to making $10 an hour at 40 hours a week, 50 weeks a year, raises that person's income by $20,000 a year. All official development assistance is roughly $60 billion a year. Allowing an additional 0.5 percent of the rich-country labor force to enter from poor countries would produce gains in the monetary value of all official development assistance.

Figure 1-6 shows the gain (in percentage of world GDP) from full labor mobility, the estimate of 100 percent of GDP, versus the gains from continued trade liberalization (fractions of 1 percent of world GDP)—of course, the current World Trade Organization agenda cannot even be seen on this scale. But while comparing full labor mobility with free trade is facetious—it is worth understanding why. Although the world welfare gains are substantial

Figure 1-6. *Why Is this Graph Facetious? The Estimated Gains from the Liberalization of Labor Mobility Relative to Continued Trade Liberalization*



Sources: Hamilton and Whalley 1984; Winters and others 2003.

for an even modest relaxation of the constraints on labor mobility, a general equilibrium model that tracks the total impact of labor movement—the effect of wages and capital prices in the sending and receiving countries, and so on—reveals the fundamental difference between the globalization of goods and movements of labor. With movements of labor, nearly all the gains accrue to the *movers*—those who change their country of residence and hence will be concentrated (table 1-4). We return to this question about the distribution of gains below.

Irresistible Force Four: Continued Employment Growth in Productivity-Resistant, Low-Skill, Hard-Core Nontradable Services

Even in a high-technology, information-revolutionized, automated, capital-intensive, whiz-bang speed-of-business economy, a haircut is a haircut. A barber in the United States can give about as many haircuts an hour as he could a hundred years ago—and about as many an hour in the United States or Germany as in India or Eritrea. This is a "productivity-resistant" service. Though giving a haircut does require skill, it does not require years and years of formal schooling and can be acquired mainly through "on-the-job" experience. Haircuts cannot be "outsourced"—even with all the wonders of telecommunication and information technology, the scissors have to touch the hair. The key question is, how much of future employment growth in rich countries looks like "haircuts"—for which the only effective form of globalization is labor mobility—versus employment in tradable goods like manufacturing,

Table 1-4. *By One Calculation, More Gains from Labor Mobility Accrue to Those Who Move*
Billions of dollars

	Welfare gains		
Region or group	*Home region*	*Temporary migrants*	*Permanent residents*
Total world	156	171	−15
Developing countries	73	90	−17
Rich industrial countries	76	69	7
Eastern Europe and countries of former Soviet Union	8	13	−5

Source: Adapted from Winters and others 2002, table 2.

agriculture, or potentially tradable services? Perhaps counterintuitively, although the future belongs to greater and greater levels of technology, information revolution, and capital–labor substitution, the future of employment belongs to haircuts.

Table 1-5 illustrates this fact. It shows the U.S. Department of Labor's forecasts of the occupational categories with the largest *absolute* projected growth

Table 1-5. *Projections of the Top Twenty-Five Occupational Categories by Absolute Increase in Employment, 2000 and 2010*

Occupation	*Employment in 2000 (thousands)*	*Employment in 2010 (thousands)*	*Projected Absolute increase (thousands)*	*Percent of the increase (of top twenty-five)*
Combined food preparation and serving workers, including fast food	2,206	2,879	673	
Retail salespersons	4,109	4,619	510	
Cashier, except gaming	3,325	3,799	474	
Security guards	1,106	1,497	391	
Waiters and waitresses	1,983	2,347	364	
Truck drivers, heavy and tractor trailer	1,749	2,095	346	
Nursing aides, orderlies and attendants	1,373	1,697	324	
Janitors and cleaners	2,348	2,665	317	
Home health aides	615	907	292	
Laborers and freight, stock and material movers	2,084	2,373	289	

(*continued*)

Table 1-5. *Projections of the Top Twenty-Five Occupational Categories by Absolute Increase in Employment, 2000 and 2010 (continued)*

Occupation	*Employment in 2000 (thousands)*	*Employment in 2010 (thousands)*	*Projected absolute increase (thousands)*	*Percent of the increase (of top twenty-five)*
Landscaping and grounds keeping	894	1,154	260	
Personal and home care	414	672	258	
Receptionists and information clerks	1,078	1,334	256	
Truck drivers, light orderly services	1,117	1,331	214	
Packers and packagers, hand	1,091	1,300	209	
Total, hard-core nontradable services, low to medium skill	27,492	32,679	5,177	56.3
Registered nurses	2,194	2,755	561	
General and operation managers	2,398	2,761	363	
Postsecondary teachers	1,344	1,659	315	
Teacher assistants	1,262	1,562	300	
Total, hard-core nontradable services, skilled	7,198	8,737	1,539	16.7
Total, hard-core nontradables	34,690	41,416	6,716	73.1

(*continued*)

Table 1-5. *Projections of the Top Twenty-Five Occupational Categories by Absolute Increase in Employment, 2000 and 2010 (continued)*

Occupation	*Employment in 2000 (thousands)*	*Employment in 2010 (thousands)*	*Projected absolute increase (thousands)*	*Percent of the increase (of top twenty-five)*
Customer service representative	1,946	2,577	631	
Office clerks, general	2,705	3,135	430	
Total, potentially tradable services, low to medium skill	4,651	5,712	1,061	11.5
Computer support specialists	506	996	490	
Computer software engineers, applications	380	760	380	
Computer software engineers	317	601	284	
Computer systems analysts	431	689	258	
Total services, skilled	1,634	3,046	1,412	15.4
Total increase, top 25 occupations	40,975	50,174	9,189	100

Source: U.S. Department of Labor data.

in employment between 2000 and 2010. Though all forecasts have to be taken with a grain of salt, particularly of economic outcomes that are determined by markets in equilibrium, these projections do illustrate three features of the evolution of the advanced economies and hence of labor markets that are robust and have enormous implications for labor mobility.

First, though the growth in new and high-skill occupations will always get popular and media attention, the absolute level and absolute growth in lower-skill occupations—even though relative wage shifts in the United States show skill-biased growth. Table 1-5 lists four separate applications with computers (support specialists; software engineers, applications; software engineers; and systems analysts); all four of these employed 1.6 million people in 2000. These computer occupations are forecast to grow extraordinarily rapidly in percentage terms (many almost doubling in ten years), so that by 2010 employment will have nearly doubled to 3 million. But even so, in 2010, when there are 3 million people with advanced skills working in these high-tech computer-related occupations, there will be 3.4 million truck drivers, 5.2 million people serving food, and 8.4 million people working as cashiers or in retail sales.

Although perhaps initially counterintuitive, this is really not so puzzling. One of the key insights from economic models with differential sectoral rates of productivity growth is that the *low*-productivity-growth sectors come to dominate employment. This is known as the Baumol effect, after William Baumol (1967), who pointed out that because many labor-intensive services are "productivity growth resistant," their relative price goes up over time, and because fewer and fewer workers are required in the rapid-productivity-growth sectors, the share of services in total employment grows over time. The source of the Baumol effect is that some things are harder to automate or to replace capital for labor with than others.

But these projections of total employment could be totally wrong, or they could be irrelevant for pressures for labor mobility if services become "tradable." Media attention flows to the new and sensational, and hence news and reports about "outsourcing" have become all the rage—so much so that one might be tempted to think that the "world is flat" (Friedman 2005) or that location is irrelevant and hence outsourcing will reduce or eliminate pressures for labor mobility. But the new nearly always reflects the same principles as the old. What made something "nontradable" was the comparison of value in different places to the transport cost—so in history when transport costs were very high, only goods with a very high ratio of value to weight (like spices) were worth transporting, while as freight costs fell even bulk grains became tradable. Thus the dramatic fall in the cost of transmitting information means that a large range of formerly "nontradable" services that involve the exchange of

information have become "tradable," and hence their production can move abroad in response to labor cost differences. Though this does lessen pressure for migration in those particular industries, one should not exaggerate the fraction of the economy to which this applies. A large range of services is still like the economists' prototypical "hard-core" nontradable: a haircut that still requires face-to-face (or, more precisely, hand-to-hair) contact.

I have classified the twenty-five occupations with the largest projected growth in employment in the United States into four categories based on my judgment of whether they are hard-core nontradables or potentially tradables ("outsourcable") and skilled or unskilled. Of the projected increase in 9 million jobs, almost three-quarters are, by my lights, in the nontradable category and 56 percent are in the nontradable and less skilled category. Though these are not the "glamorous" high-tech or skilled jobs, the fact of the matter is that the United States is going to need more home health care workers, more janitors, more security guards, and more fast food employees. The existence of massive numbers of low-skill, hard-core nontradable jobs in rich industrial countries is a fourth irresistible force for greater labor mobility.

Of course, the other way these projections of employment growth in hard-core nontradables could be wrong is if there is technical innovation that finds ways to replace these jobs altogether with machines or technology. There are already machines being developed that can, say, vacuum floors or deliver items within a workplace, and one can easily imagine in the not too distant future that taxi drivers could be replaced with global positioning systems and vehicles that are automatically piloted. I would like to point out the global perverseness of this innovation, driven as it is by the distortions in global labor markets. Let me illustrate with a story about my neighbor when I lived in Massachusetts, Paul Baratta, and his lawn mower.

One recent Saturday, I was reading papers about the historical evolution of global inequality when Paul called me to rave about his new lawn mower. He had nursed his old lawn mower along for twenty-five years (he is quite mechanical), but it (and he) had finally broken down and a new mower had been purchased. He was excited that for exactly the same *nominal* (not inflation-adjusted) price of about $400 that he paid twenty-five years ago he got twice the mower—almost twice the horsepower, self-propelled with a variable-speed transmission, a casing designed for air flow conducive to mulching, and so on. I shared his enthusiasm because, coincidentally, I had purchased the same lawn mower just a week before.

When I returned from lawn mower lauding with my friend Paul to reading about global inequality, I realized that this simple experience illustrated three important forces. First, for the entirely aesthetic care of our lawns, Paul

and I deployed a greater capital stock than most rural households in poor countries deploy to earn their living. A rural household with access to a 5-horsepower mower is capital rich. The capital intensity in rich industrial counties is spectacular.

Second, Paul and I both mowed our lawns ourselves. Given the opportunity cost of our time and our willingness to pay, there are *billions* of people on the planet who would gladly mow our lawn for the price we would be willing to pay. Of course this raises in its starkest form the distributional issue to which we return in coming chapters, the issue that makes international mobility such a "third-rail" political issue: It benefits the globally richest (educated individuals like Paul and myself) and the globally poorest (migrants who would mow lawns) but has feared effects on the poorer in rich countries (existing migrants or natives who would mow lawns). But again (and I will return to it), the real threat to the working poor in rich countries is displacement by capital, not other labor.

However, the final insight from the technological advances of the lawn mower is that these advances required highly trained engineers working for years to make advances that made an owner-operated labor saving device better. This is nationally sound but globally perverse economics. Given the relative prices and endowments in rich countries, the incentives are to deploy very highly skilled labor to create innovations that *reduce* demand for low-skilled labor. In fact, there is substantial evidence that technical progress in rich countries has not been neutral between skilled and unskilled labor but rather has been skill enhancing. Moreover, this skill-biased technical change is induced by relative prices and accounts for a substantial fraction of the rise in wage inequality (and/or unemployment) in industrial countries (Acemoglu and others 2003).

The development literature points out that research in specific areas—such as agriculture or medicine—is biased away from the concerns of the poorer countries, because of differences in willingness to pay. So, for instance, there are innovative proposals to induce pharmaceutical companies to address major health issues facing poor nations because their market incentives are to focus on conditions that disproportionately affect the rich. But the distortion in the research and development induced by restrictions on labor mobility gets almost no attention and almost certainly has an impact that is *orders of magnitude* larger. The current configuration of the "everything but labor" global economy produces incentives for the invention of more and more *unskilled labor saving* devices in a world in which *the* key price for poverty alleviation is the wage of unskilled labor. Because of the artificially inflated price of labor in rich countries, the rich world is full of highly educated innovators dedicated, indirectly, to lowering the one price on which progress in poverty reduction depends.

Just think of the automated teller machine (ATM), which was invented and then diffused so as to reduce the labor content of handling routine banking transactions. There are almost certainly billions of people who would have been happy to take the jobs an ATM replaces, at wages that would make ATMs uneconomical. However, once the ATM had been invented, the fixed costs of its development borne, banking computing systems made consistent with it, and mass production begun so unit costs fell, then ATMs began to be present even where labor costs are extraordinarily low.

Once this perversity strikes you, it will strike you again and again if you live in a rich country (and particularly if one travels back and forth from poor to rich). In the cities of poor countries, it is not unusual for groceries to be delivered directly to your door. Even when I was a teenager (in the mid-1970s), many of my friends had jobs helping carry groceries to customers' cars. Now, many retail stores (grocery, hardware, general merchandise) are introducing automated checkout, whereby customers use sophisticated technology and invested capital to ring up and pay for their own groceries. Why did people invent a technology to eliminate people working in retail when billions of the people on the planet would be pleased to ring up your groceries? This labor-saving innovation was induced by distortions in the international market for labor.

Although something of an aside from labor projections, this is an important point, because one objection raised to allowing temporary labor mobility is that it creates "distortions" in the industries that survive on "cheap labor." The further argument is that if importing labor were impossible, then industries would not move abroad but would survive by inducing innovations that reduce labor demand and substitute capital for labor. For instance, Martin (2004) tells the story of tomatoes in California and, to my mind, gets the real point exactly backward. In the 1960s, as part of the *Bracero* program of allowing temporary migrant labor, tomatoes in California were picked almost entirely by seasonal migrants. When this program ended in the mid-1960s, farmers claimed the tomato industry would leave California. But by a combination of applying science to develop tomatoes whose shape and skin were more conducive to mechanization and developing a machine harvester, the California industry survived and even thrived—Martin emphasizes that it produces five times more tomatoes today than in the 1960s. But from an economist's point of view, what is the "distortion"—allowing seasonal workers (that is, more open labor markets across borders) or the induced-labor-demand-reducing technological change from enforcing a restriction that willing employers and willing workers could not make a contract?

Any economist, when presented with the same scenario with trade in goods, would be able to give an easy answer—if an industry invents a new technology

to displace an imported intermediate input because the price of the input is driven up by border restrictions like tariffs or quotas, this innovation is a *response* to a distortion, not that the lack of a tariff to induce that innovation would be a "distortion." From a global viewpoint, highly skilled labor devoted to research and development to reduce demand for labor (for example, machine-harvestable tomatoes, lawn mowers, ATMs, self-checkout at retail stores, robots that vacuum, pre-peeled carrots) is an inefficiency that is the result of the massive "distortion" in global labor markets.[14] Because about the only thing known yet about "pro-poor" growth is that it is labor intensive, there is obviously a massive contradiction between rich countries pushing "pro-poor" growth via their rhetoric about development assistance while at the same time promoting massively anti-pro-poor technological change via their policies toward labor mobility.

Conclusion

The four forces for greater labor mobility across borders have been growing and will continue to grow:

—The gaps between what the same worker can make in one country versus another are higher than they have ever been in history—much higher than the wage differentials that drove the mass migrations of the nineteenth century.

—Demographic destinies will increase the gap in the relative supplies of young workers.

—The globalization of everything but labor has both reduced the costs and made the idea of mobility more acceptable.

—The continued expansion of jobs in low-skill, hard-core nontradable service industries in rich countries creates "pull" pressures.

14. This "distortion" perhaps changes the relative unskilled or skilled real wages in a country and hence may have positive effects for some people (the unskilled in the United States) and negative for others (unskilled elsewhere)—but then again, so do nearly all economic distortions.