An Evaluation of International Migration Theory: The North American Case

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IN A RECENT ARTICLE in this journal, we attempted to summarize and integrate contemporary theories of international migration. We presented each conceptual scheme on its own terms to illuminate key assumptions and hypotheses, and compared the various frameworks to highlight areas of inconsistency and complementarity. The exercise sought to lay the groundwork for an empirical evaluation of theoretical propositions, toward the goal of building a comprehensive, empirically grounded theory of international migration for the twenty-first century (Massey et al. 1993).

Our purpose here is to conduct a systematic review of the empirical research literature on North American immigration, focusing primarily on the post-1945 period. The number of studies on North American immigration is vast. A review of 25 social science journals over the past ten years turned up more than 300 references on US or Canadian immigration. Most of this work, unfortunately, is not relevant to the task of evaluating theory. The number of studies that directly bear on theoretical propositions is small, and the number that critically compare competing theoretical models is even smaller.

A good deal of the literature is not empirical at all; it consists of polemic arguments or theoretical perorations, at times illustrated with a few facts. The empirical studies, moreover, tend to be descriptive and of limited use in sorting out the various claims and counter-claims of competing theories. Although determining the number of migrants and their characteristics may be important for many purposes, descriptive facts are not particu-

larly useful theoretically, and they provide little basis for coming to terms with the fundamental forces driving immigration into North America.

Among the empirical studies that purport to be analytic, furthermore, a lamentably large proportion are flawed. The statistical methods they employ are rudimentary or biased, the models are simplistic, and appropriate controls are lacking. Often no particular issue—theoretical or substantive—is addressed. In many cases, unreliable survey designs offer little basis for testing hypotheses or for generalization. Nonrandom samples of migrants from one sending community, one receiving area, one job site, or one social service agency are common.

There are two basic reasons for this state of affairs. The first is simply a lack of good, representative data. A sizable share of the immigrant flow into North America is undocumented, and thus outside national statistical systems. Even for legal immigrants, however, the quantity and quality of information are generally inadequate. Statistics on immigrant entries are mired in legal concepts rather than demographic realities (Kraly and Warren 1991, 1992); the amount of information gathered from legal arrivals is minimal (Levine, Hill, and Warren 1985); and neither Canada nor the United States maintains a useable record of immigrant departures (Warren and Kraly 1985).

In addition, unlike other fields of study, international migration has never evolved a specialized survey dataset. There is no equivalent of the World Fertility Survey, the Demographic and Health Survey, or the US National Longitudinal Survey, which were developed to provide information on fertility, mortality, and stratification, respectively. Although national censuses provide some information about the foreign-born, census data have their own problems and limitations (see Bean, Browning, and Frisbie 1984; Borjas 1985, 1987; Passel 1985; Lindstrom and Massey 1994). In particular, they underenumerate undocumented migrants, they provide no information on legal status, and they are ill-suited to the study of immigration as a process rather than an event (Passel 1985).

As a result of these and other difficulties, much of the North American research literature is devoted to methodological and measurement issues: how to measure undocumented migration; how to count the number of emigrants; how to study patterns of immigrant assimilation; how to analyze the social and economic consequences of immigration. Although these questions are important, their answers do not advance theoretical understanding of the forces that shape and control international migration.

Even allowing for difficulty of measurement, a second and more fundamental reason for the scarcity of good, incisive studies of immigration is the lack of a commonly accepted theoretical framework. Social scientists do not approach the study of immigration from a shared paradigm, but from a variety of competing theoretical viewpoints fragmented across disciplines, regions, and ideologies. As a result, research on the subject tends to be nar-

row, inefficient, and characterized by duplication, miscommunication, reinvention, and bickering about fundamentals. Only when researchers accept common theories, concepts, tools, and standards will knowledge begin to accumulate (see Kuhn 1962).

At this juncture, then, population scientists are little closer to achieving a solid understanding of the powerful forces responsible for the remarkable resurgence of immigration into North America. Through this empirical review, we hope to begin building a framework for accumulating such knowledge. We start by evaluating theories that account for the initiation of international migration and then consider those that explain the persistence of transnational movements across space and time. After our review, we reconsider the current state of theoretical knowledge in light of the available empirical evidence, and then specify the kinds of studies and data that would be needed to address the outstanding theoretical questions and conceptual issues.

The initiation of international migration

Neoclassical economics

Traditional neoclassical economics views international migration as a simple sum of individual cost–benefit decisions undertaken to maximize expected income through international movement. Expected income is defined as the probability of employment (one minus the unemployment rate) times the mean income in whatever economic sector a rational actor contemplates working. For undocumented migrants, this product also needs to be multiplied by the probability of successfully entering the destination country and evading deportation (one minus the probability of getting caught). The difference between incomes expected at origin and destination, when summed and discounted over some time horizon and added to the negative costs of movement, yields the expected net gain from movement, which if positive promotes migration (see Sjaastad 1962; Todaro 1969; Todaro and Maruszko 1987).

According to neoclassical theory, flows of labor move from low-wage to high-wage countries, and capital (including human capital) moves in the opposite direction. As a result, migration exerts downward pressure on wages in destination countries and upward pressure on wages in sending countries until an equilibrium is reached. At equilibrium, the international wage gap exactly equals the cost of migration between the countries (including psychic costs), and net migration ceases. Labor migration theoretically should continue until this equilibrium is achieved and should not stop until the gap in expected wages (minus migration costs) has been closed. In theory, emigrants should go to the destination country in which they expect the highest net gain.

Despite the familiarity of this argument and its widespread acceptance by scholars, policymakers, and the public, it has generally not been put to rigorous test in explaining international migration. Although attempts have been made to relate immigration flows and individual emigration propensities to differentials in wages and incomes, studies generally have not examined expected wages (the product of wages and employment rates), which since Todaro (1969) have been accepted theoretically as the relevant determinant of migration flows. Measures of employment (or unemployment), when they are included in regression analyses of migration flows, are typically entered additively rather than multiplicatively, as specified by the Todaro model.

Although Puerto Rico is not an independent country, movement between it and the US mainland replicates many of the features of transnational movement, and it provides a unique laboratory to test the propositions of neoclassical economics. As with migration from other independent nations in the Caribbean region, movement out of the Commonwealth of Puerto Rico entails crossing significant cultural, linguistic, and geographic boundaries, but unlike migration from the neighboring Dominican Republic, it occurs without legal restriction. In the absence of legal barriers, movement between Puerto Rico and the US mainland should closely follow the predictions of neoclassical theory, since there are no legal impediments to the functioning of the transnational labor market.

The earliest analysis of Puerto Rico–US migration was conducted by Fleisher (1963), who estimated a series of regression models to predict annual net movement from the island to the mainland for the period 1947–58. The small number of observations limits the reliability of Fleisher's findings, however, and creates problems for hypothesis testing. In order to conserve degrees of freedom, he fit a basic model predicting net migration from an "unemployment ratio" that expressed the difference between Puerto Rican and US unemployment rates as a proportion of the US rate; then he added in other predictors and observed their effect on the baseline model's explanatory power.

Fleisher's analysis revealed a strong relationship between Puerto Rican unemployment and the volume of migration to the United States ($R^2 = .61$). The higher the relative unemployment on the island, the greater the outflow of migrants to the mainland. Including the ratio of hourly manufacturing earnings in Puerto Rico to those in New York added no explanatory power to the model, and this wage ratio only weakly predicted the volume of outmigration when it was regressed on migration by itself. The relative cost of air transportation to New York did, however, improve the model's fit significantly (raising the R^2 to .83). As expected, the higher the costs of transportation, the lower the volume of net migration to the mainland.

These results were updated by Maldonado (1976) using annual data from 1947 to 1973. The additional years of observation allowed her to en-

ter more explanatory variables and to carry out more reliable statistical tests. She regressed total net outmigration on three ratios that measured economic conditions in Puerto Rico relative to those in the four leading states of destination: New York, New Jersey, Connecticut, and Illinois. The three conditions she examined were unemployment, hourly wages in manufacturing, and average monthly welfare payments.

Unlike Fleisher (1963), she found that differentials in both unemployment and wages were significant in determining the volume of migration between Puerto Rico and the mainland ($R^2 = .57$). As Puerto Rican unemployment increased relative to that in the United States, the volume of outmigration rose significantly; and as average wages in Puerto Rico increased relative to those on the mainland, the volume of outmigration fell. The size of the outflow was marginally related to the relative size of welfare payments on the island and the mainland. Estimates of the model developed for the period 1947 to 1967, when Maldonado judged economic motivations to be paramount, yielded a tighter fit ($R^2 = .80$), and the effect of relative employment increased while that of relative wages declined.

From 1950 to 1970 a net figure of 643,000 Puerto Ricans emigrated to the US mainland, and the proportion of all Puerto Ricans living on the mainland grew from 9 percent to 23 percent (Maldonado 1976). According to neoclassical theory, this large outflow should have put substantial upward pressure on island wages, and in fact from 1950 to 1970 average hourly wages in Puerto Rican manufacturing rose from $0.42 to $2.33 while the ratio of mainland to island wages dropped from 3.4 to 1.9 (Castillo-Freeman and Freeman 1992). As migration proceeded, therefore, the wage gap was indeed closing. Thus, research on Puerto Rico–US migration broadly supports the postulates of neoclassical economic theory, at least through the early 1970s.

After this time, the Puerto Rican case provides an interesting natural experiment, since in 1974 the island was suddenly brought into conformity with the minimum wage laws of the United States. Prior to 1974, local wage boards had exempted many of the island's industries from US standards and set substantially lower minimum wages on an industry-by-industry basis. These boards were abolished by the US Congress in 1974, and over the next several years Puerto Rican industries were brought up to US minimum wage standards. By 1977 the island had achieved the same average minimum wage and the same level of industrial coverage as the US mainland.

Given the relatively lower wage rate that prevailed on the island before 1974, the new wage policy caused a sudden and sharp increase in the average wage rate. It also reduced the variance of the Puerto Rican wage distribution and produced a substantial compression of wages around the legal minimum. As wages rose, however, so did unemployment, because a growing number of industries no longer found it profitable to engage in

production on the island (Castillo-Freeman and Freeman 1992). According to neoclassical theory, this exogenous wage shock should have been followed by a change in patterns and levels of labor migration to the United States, since shifts in employment levels and wages must have altered the distribution of expected wages on the island.

In a series of studies, Santiago (1991, 1993) has examined the effect of Puerto Rican wage policy on migration. Working with monthly data from January 1970 to June 1987, he related net migration rates to changes in four measures of the minimum wage: the nominal change in the minimum wage, the real change in the minimum wage, the change in the ratio of the minimum to the average wage, and the change in the ratio of the minimum to the average wage weighted by the percentage of industries covered. He derived migration elasticities using a first-order autoregressive model with moving averages and seasonal differencing estimated using the Akaike Information Criterion (Amemiya 1985). His computations suggest that raising the minimum wage in Puerto Rico significantly slowed the volume of emigration to the mainland. Although the island continued to experience net outmigration in most years, at the margins the new policy reduced the outflow below what it might otherwise have been.

Santiago's estimates have been criticized by Castillo-Freeman and Freeman (1992), however, for not including other control variables, for not considering the displacement effect of unemployment on the island, for employing a complex, nonstandard model, and for the fact that Santiago's zero-order correlations yielded coefficients with signs opposite those achieved using his more complex model. They developed an alternative specification that expressed the rate of annual net migration as a function of the US gross national product (GNP), the Puerto Rican GNP, and the Puerto Rican minimum wage (all variables logged). They found that while outmigration was positively related to US GNP and negatively related to Puerto Rican GNP, it was not significantly affected by the minimum wage itself. Although the effect was positive, as in Santiago's estimates, the standard error was too large to place much confidence in the result.

Castillo-Freeman and Freeman (1992) argue that no strong conclusion can be drawn about the effect of the minimum wage hike on the volume of Puerto Rican outmigration. Instead, they focused on changes in the selectivity of migration. Because of the sharp increase in island wages, employment levels fell in low-wage industries and a large number of unskilled and blue collar workers were displaced. Because of high capital/labor ratios on the US mainland, these workers could expect a higher likelihood of employment and higher wages there than in Puerto Rico, inducing them to emigrate. At the same time, however, higher average wages on the island might induce mainland Puerto Ricans with skills and education to depart for the island.

Consistent with earlier descriptive work by Ortiz (1986), both Castillo-Freeman and Freeman (1992) and Ramos (1992) find a pattern of shifting migrant selectivity over time. After 1974, migration from the island to the mainland became more prevalent among the unemployed and by 1980 was highly selective of those with little schooling. At the same time, migration from the mainland to the island became more selective of those with more education. As a result, post-1975 arrivals earned the lowest wages among Puerto Ricans on the mainland, while US-born Puerto Ricans earned the highest wages among those on the island.

These findings highlight the selective nature of migration, which is implicit in human capital models but frequently ignored in empirical applications based on aggregate data. A recent study by Melendez (1994) shows that Puerto Rican migrants are selected in terms not only of education, but also of occupation. During 1982–88, he found that farmworkers, laborers, and crafts workers were overrepresented among migrants to the mainland, and that this pattern of occupational selectivity was explained by two factors: unemployment in Puerto Rico and having a job offer from the United States. Relative wages appeared to play no role in selecting who migrated to the United States.

Migration between Mexico and the United States—clearly the largest sustained flow of migrant workers in the contemporary world—also has been studied intensively. Between 1940 and 1992, some 1.2 million Mexicans were admitted into the United States as legal immigrants (Immigration and Naturalization Service 1993); another 4.6 million came temporarily as contract workers (also known as *braceros*—see Calavita 1992); and a net figure of around 4 million entered without documents (Passel 1985; Passel and Woodrow 1987). Some 2.3 million of the last-named were later legalized under the 1986 Immigration Reform and Control Act (Immigration and Naturalization Service 1992). As a result of the massive entry of migrants and their subsequent natural increase, by 1990 the population of Mexican origin comprised 6 percent of the total US population.

In neoclassical terms, the incentives for migration between Mexico and the United States are large. Average wage rates differ by a factor of five between the two countries (Conroy 1980); and even after adjusting for the costs of transportation, entry, and foreign living, most Mexican workers can expect to earn three times what they would at home (Cuthbert and Sterns 1981). The absence of a direct count of undocumented Mexican migrants, however, causes serious problems for analysis, and most investigators have been forced to rely on government apprehensions statistics as a crude indicator of the gross inflow. These data are simply totals of the number of Mexicans caught trying to enter the country illegally and subsequently deported by the Immigration and Naturalization Service (INS). They tally enforcement actions and not people: the same person may be caught once,

twice, several times, or not at all (see Espenshade 1990; Donato, Durand, and Massey 1992b; Massey and Singer 1994).

The first systematic investigation of Mexico–US migration using INS data was carried out by Frisbie (1975). He estimated the rate of illegal migration as the annual number of Mexican apprehensions divided by the midyear population of Mexico. He regressed yearly changes in this rate on annual changes in six factors: farm wages, agricultural productivity, and agricultural commodity prices in Mexico; and US farm wages, US agricultural productivity, and the rate of US capital investment in Mexico.

Overall, his model explained about half of the yearly variation in illegal migration to the United States. The two most important predictors were farm wages and agricultural productivity in Mexico—as they rose, illegal migration to the United States fell. Almost as important were US farm wages, which worked in the opposite direction: as they rose so did migration. Also significant was agricultural productivity in the United States, with the direction again being positive: as US farm productivity increased, more undocumented workers were attracted from Mexico. Together, these four variables accounted for 61 percent of the explained variance. Changes in Mexican commodity prices and shifts in the rate of US investment in Mexico were less important.

Jenkins (1977) expanded Frisbie's analysis by increasing the range of years, adding several new variables as predictors, and estimating their effect on bracero as well as illegal migration. Braceros were Mexican agricultural workers contracted through a bi-national labor program administered by the US government from 1942 through 1964 (Calavita 1992). In addition to the variables considered by Frisbie, Jenkins also included the rate of capital investment in Mexican agriculture, the rate of seasonal farm employment in the United States, the level of US agricultural unemployment, US agricultural commodity prices, and the Mexico–US wage differential.

Jenkins carried out a lagged regression of first differences for the period 1948 through 1972 and reported standardized partial correlations. His estimates showed that the Mexico–US wage differential had a positive effect on the rate of both bracero and illegal migration, and was particularly strong in predicting the total rate of Mexican outmigration (bracero plus illegal migration). As suggested by neoclassical theory, the rate of migration to the United States rose as the wage differential widened. The result was the same whether the wage gap was measured as a difference or as a ratio between Mexican and US wages.

In general, Jenkins found that push factors in Mexico, taken together, were stronger than pull factors in the United States in predicting the rate of outmigration. As Mexican wages, commodity prices, farm productivity, and levels of investment in agriculture rose, outmigration to the United States fell. In contrast to Frisbie, however, Jenkins found that the rate of Mexican emigration was negatively related to changes in US farm wages and agri-

cultural productivity (although he replicated Frisbie's positive correlation between Mexican emigration and US commodity prices).

Blejer, Johnson, and Prozecanski (1978) further extended research on Mexico–US migration by considering legal as well as illegal migrants. They focused on the 15-year period from 1960 to 1975 and employed models that assessed the effects of only two variables on migration levels: wage differentials and unemployment ratios. They estimated a series of models to predict the yearly number of legal immigrants and undocumented apprehensions from the ratio of Mexico/US unemployment, the ratio of Mexico/US industrial wages, and the ratio of Mexico/US agricultural wages. All variables were expressed as logs to improve the model's statistical fit.

The model performed better for undocumented ($R^2 = .71$) than for legal immigrants ($R^2 = .35$), and the explanatory power of the employment variable exceeded that of wages, whether or not the model considered agricultural or industrial wages, and whether or not it examined legal, undocumented, or total migration. Most of the explanatory power captured by the unemployment ratio came from variation in Mexican unemployment levels. Indeed, the log of the Mexican unemployment rate by itself performed better than the Mexico/US employment ratio. As Mexican unemployment increased, whether absolutely or in relation to rates in the US, the volume of both legal and undocumented migration from Mexico rose. Relative wages contributed no additional explanatory power once the effect of Mexican unemployment was controlled.

Probably the best study to examine the economic determinants of Mexico–US migration arose not as an explicit attempt to test theory, but, tellingly, as an effort to evaluate public policy. The passage of the Immigration Reform and Control Act (IRCA) in 1986 brought demands from policymakers and the public to evaluate its effects in deterring illegal Mexican migration to the United States. In response, Bean et al. (1990) studied trends in the number of monthly apprehensions of Mexicans along the southern US border. They regressed the log of monthly apprehensions from 1977 through 1988 on a set of independent variables that included dummy variables for periods before and after the implementation of IRCA.

Of greatest theoretical interest are the substantive variables they included as controls in their policy evaluation. In addition to IRCA-related indicators, the investigators included the size of the Mexican population aged 15 to 34, the ratio of US to Mexican male unemployment rates, and the ratio of US to Mexican nonagricultural wages. They also controlled for the number of hours spent by US immigration agents patrolling the border (linewatch hours) and the amount of capital spent on enforcement by the INS (enforcement capital).

The estimated model—summarized by White, Bean, and Espenshade (1990) and reported fully in Bean et al. (1990)—yielded a remarkably good fit to the data ($R^2 = .941$), and its coefficients were generally consistent

with predictions derived from neoclassical theory. The effect of the unemployment ratio was strong and negative, while that of the wage ratio was strong and positive. As wages in the United States rose relative to those in Mexico, the monthly flow of undocumented migrants increased; and as unemployment in the United States rose relative to that in Mexico, the flow decreased. The level of undocumented migration also rose as the supply of young Mexican workers increased, and, not surprisingly, the number of apprehensions was positively related to linewatch hours and enforcement capital. The same basic pattern of effects was found when investigators considered apprehensions within the country's interior, adult male apprehensions, or the apprehensions of women and children.

Espenshade (1990) argued, however, that the number of apprehensions is not a good indicator of the gross inflow of undocumented migrants. The correspondence between apprehensions and illegal entrants depends on the probability of apprehension, and if this parameter changes over time it could bias the analysis performed by Bean et al. (1990). Drawing on probability theory, he developed a "repeated trials model" to estimate the likelihood of apprehension at any point in time and then applied this estimate to the number of apprehensions recorded by the INS. In this way, he derived a new estimate of the gross inflow of undocumented migrants from Mexico to the United States. When he replicated the analysis of Bean et al. (1990), however, he found virtually the same pattern of results as before.

In addition to these aggregate-level analyses, two studies employed individual-level data to evaluate propositions derived from neoclassical theory. Taylor (1987) estimated a structural probit model to predict the likelihood that residents of two Mexican communities migrated to the United States during the year prior to the survey. In addition to such variables as age, sex, headship, migrant experience, family size, kinship ties, and total household income, Taylor developed an indicator of the difference in family members' expected contributions to household income in the United States and Mexico—precisely the factor that would be identified by neoclassical economists as the principal determinant of migration in a household-decision framework.

This quantity was estimated using instrumental variable techniques. Taylor examined contributions to household income by individuals as migrants in the United States and as workers in Mexico and regressed these figures on selected individual and household characteristics, correcting for self-selection into the US or Mexican workforce. These equations were then used to predict the income each person could expect to earn working in the United States and Mexico during the year prior to the survey. These predictions provide estimates of "expected income" that correspond closely to the concept defined in neoclassical theory, and the difference between them yields an unbiased estimate of the expected net gain to Mexican households from sending a family member abroad.

If neoclassical theory is correct, we expect this factor to play the predominant role in the decision to migrate, and to account for most of the variation in likelihood of migration. Although expected income is indeed positive and significant in predicting the likelihood of international movement, it does not explain the bulk of the variation nor is it even the strongest effect in the model. As will be discussed below, even controlling for differences in expected incomes, such other factors as migrant experience and network connections play an important role in structuring the migration decision. Thus, neoclassical theory is clearly supported, but results suggest that, by itself, it does not constitute a complete explanation of the migration decision.

A second micro-analysis used survey data from El Salvador gathered during the mid-to-late 1980s. Parallel to Taylor, Funkhouser (1992) estimated regression equations to predict wages that individuals could expect to earn in the United States and El Salvador given their personal characteristics. Rather than estimating a structural probit model, however, he simply demonstrated the existence of a differential in expected earnings between the United States and El Salvador, and then showed that educated, urban workers could expect a substantially larger earnings gain from US migration than poorly educated rural dwellers, especially when the fixed costs of movement were subtracted. Emigration was thus a more viable strategy for the urban middle class. He then presented survey evidence to support this conclusion: US migrants were differentially selected from the middle classes.

This conclusion is consistent with the results of an aggregate-level analysis by Jones (1989), who related levels of emigration from different Salvadoran provinces to various indicators of political violence and economic disruption. He found that political violence produced emigration only indirectly, by causing economic setbacks—sabotage, land disputes, strikes, abandonment, and disinvestment—which themselves promoted movement. As a result of the economic dislocations, poor rural villagers from the northern and central provinces migrated internally or to neighboring countries, and better-off urban dwellers from the eastern provinces and the capital city of San Salvador migrated to the United States.

Funkhouser buttressed his neoclassical interpretation of the data with additional estimates showing that Salvadoran households were less likely to have members working locally when they had one or more members remitting money from the United States, and that the likelihood of withdrawing from the local labor force increased as the size of US remittances grew. Given the large direct effect of US migration in reducing the Salvadoran labor force (somewhere between 10 and 15 percent of the entire country had emigrated by 1988), the upward pressure on wages must have been substantial. He estimated aggregate and individual regressions to show that people living in areas with a high prevalence of US migrants could

expect to earn significantly higher wages (4 to 8 percent higher) than those living elsewhere.

Given the scale of Mexican emigration to the United States, neoclassical theory would predict substantial upward pressure on wages in Mexico as well. According to Corona (1993), by 1990 at least 5 percent of all people born in Mexico were living in the United States. Consistent with the upward pressure postulated by neoclassical theory, Gregory (1986) found a steady increase in Mexican real wages through the late 1970s in both rural and urban areas. During this time the volume of emigration to the United States was growing, but the Mexican economic crisis of the 1980s had not yet begun. By the late 1970s, in fact, the Bank of Mexico was reporting rural labor shortages in core sending regions.

Thus, the accumulated empirical evidence generally supports neoclassical theory's fundamental proposition that immigration is tied to international differences in wage rates. In El Salvador, the people who migrated most frequently were those least affected by the political violence who could expect the greatest income gain from working in the United States. In Mexico, aggregate-level studies consistently find that transnational wage differentials strongly predict the volume and rate of emigration to the United States; and individual-level studies show that the probability of US emigration rises as expected income gains increase. In Puerto Rico, studies generally find a significant relationship between the volume of emigration and mainland/ island wage differentials. There is also evidence, albeit inconclusive, of a migratory response to Puerto Rico's minimum wage hike in 1974.

It seems clear, therefore, that transnational migration is sensitive to gaps in wage rates between countries of origin and destination. It is also clear, however, that international migration is not fully explained by wage gaps alone. At the most general level, countries with the lowest wages relative to those in the United States are not necessarily the largest senders of migrants; and even after wage differentials are controlled, significant variation in the aggregate volume or individual likelihood of emigration remains unexplained.

Although migration decisions may be sensitive to international wage differentials, therefore, the accumulated empirical evidence suggests that they may not be the most important factor in determining migration decisions. Whereas wage variables are occasionally found to be insignificant in migration models (see Fleisher 1963), employment variables are always significant. In the studies we have reviewed, the effects of employment-related variables generally equalled or exceeded those of wage-related indicators.

As an example, Maldonado (1976) found that unemployment differentials completely dominated wage gaps in explaining migration between Puerto Rico and the US mainland. A neoclassical economist might argue

that shifts in employment rates alter the distribution of expected wages and, hence, the distribution of expected net gains from migration, and that Maldonado's model simply captures this effect additively. But when we re-estimated Maldonado's model using the ratio of expected wages (wages times employment probabilities) rather than the ratio of absolute wages, the pattern of results remained the same: unemployment ratios still dominated expected wage ratios in predicting the flow of outmigrants to the mainland.

This result lends credence to the conclusions of Ramos (1992) and Castillo-Freeman and Freeman (1992), who argue that Puerto Rican migration is driven more by displacement arising from structural economic change than from yearly fluctuations in the wage gap. An alternate explanation advanced by Hatton and Williamson (1992) with respect to historical immigration to the United States is that unemployment rates determine the timing of migration and thus account for much of the year-to-year fluctuation in migration rates, but that wage differentials determine the underlying propensity to migrate and drive long-term trends. Unfortunately, no analyst has yet examined contemporary immigration patterns with the care and analytic skill that Hatton and Williamson have devoted to the study of historical immigration flows.

The new economics of migration

In recent years a new theoretical paradigm has risen to challenge many of the hypotheses and assumptions of neoclassical economics. According to neoclassical theory, immigration stems from international disequilibria in labor markets that produce gaps in expected wages across national borders; other national markets are assumed to be complete and well-functioning and to play no role in the migration decision. People move because they expect to reap a gain in the form of higher net earnings abroad.

The new economics of migration argues that international migration stems from failures in other markets that threaten the material well-being of households and create barriers to their economic advancement. Unlike the neoclassical model, the new economic model does not posit complete and well-functioning markets. Indeed, it recognizes that in many settings, particularly in the developing world, markets for capital, futures, and insurance may be absent, imperfect, or inaccessible. In order to self-insure against risks to income, production, and property, or to gain access to scarce investment capital, households send one or more workers to foreign labor markets. Given the relatively higher wages in developed countries, international migration offers a particularly attractive and effective strategy for minimizing risks and overcoming capital constraints (see Stark 1991).

This theoretical view is consistent with a growing body of circumstantial evidence from the North American migratory system that suggests that

poor households use international migration in a deliberate way to diversify their labor portfolios. The combination of foreign wage labor with local work and other economic activities has been documented for the Dominican Republic (Bray 1984; Georges 1990; Portes and Guarnizo 1990; Grasmuck and Pessar 1991), Puerto Rico (Jackson 1984; Hernández Cruz 1985, 1986; Rodríguez 1988), the English-speaking Caribbean (Palmer 1974; Rubenstein 1982, 1983; Wood and McCoy 1985; Hope 1986; Levine 1987; Maingot 1991; Simmons and Guengant 1992), Central America (Poitras 1980; Funkhouser 1992; United Nations 1991), the Philippines (Griffiths 1979; McArthur 1979; Root and DeJong 1991), and, of course, Mexico (Reichert 1979, 1981, 1982; Mines 1981; Dinerman 1982; Roberts 1982; Grindle 1988; Massey et al. 1987; Durand and Massey 1992).

In these countries, it is clear that rural communities are not isolated, economically autonomous entities, if they ever were. Rather they are closely connected to national and international markets and rely heavily on migrant earnings to support local investment and consumption. Adelman, Taylor, and Vogel (1988) found that inhabitants of one Mexican community consumed 37 percent more goods and services than they produced, and that this "trade deficit" was covered entirely by migrant remittances: 56 percent from the United States and 44 percent from the rest of Mexico. Massey and Parrado (1994) found that in some Mexican communities, the annual flow of remittances from the United States was greater than the yearly total of locally earned income. In other words, there were more US dollars circulating locally than the dollar equivalent of pesos.

Such linkages between families in sending regions and migrants working in foreign settings contradict the assumptions of the neoclassical human capital model. According to this model, individuals relocate permanently in whatever sector yields the highest expected lifetime income and they play little role in the economic life of the sending community thereafter. Outmigration influences the local economy through its effects on prices and incomes, shifting the supply of labor inward or outward and, hence, raising or lowering wages. Income transfers in the form of remittances are outside the realm of the traditional neoclassical model.

In addition, neoclassical household models do not allow income transfers to have nonunitary effects on the income of farm households: each additional dollar sent from abroad should increase household income by just one dollar (Singh, Squire, and Strauss 1986). Because risk is disregarded and all markets are assumed to be complete and well-functioning, production decisions are presumed to be independent of household budget constraints and other sources of income (Taylor 1992a). Migrant remittances increase the utility of households by loosening the budget constraint on consumption by the amount of the remittances; but unless relative prices change, they should not influence other income-generating activities. The

increase in income simply produces a greater consumption of "normal goods," given the household-farm budget constraint.

Leisure is one kind of normal good consumed by rural households, and farm families may employ hired labor (presumed to be a perfect substitute for family labor) in order to generate more leisure time for family members. But under neoclassical theory, remittances should not affect the household's use of total labor or other inputs in production. As profit maximizers, farmers should use inputs only up to the point where the value of their marginal product equals their cost. Migrant remittances do not alter this calculus unless they alter prices, which is generally ruled out in static models.

Recent work in rural Mexico suggests that these conditions do not hold. A detailed analysis of survey data from two communities in Michoacán by Taylor and colleagues shows that remittances increase the productive use of machinery, land, and hired labor by households (Fletcher and Taylor 1992). In addition, they promote the acquisition of income-producing assets such as livestock, equipment, and education (Taylor and Wyatt 1993). As a result, remittances from the United States raised household income by more than the value of the remittances themselves, something not allowed under neoclassical theory (Taylor 1992a).

When Taylor (1992a) regressed household income on remittances, controlling for asset ownership, the resulting coefficient was 1.85, suggesting that each dollar remitted eventually brought in $1.85 in additional household income. This nonunitary effect occurred because a significant portion of the money was not spent on normal consumption goods (as allowed under neoclassical assumptions), but on income-producing assets (as predicted by new economic theory). Remittances are likely to be used for investment rather than consumption when access to capital is limited and when risk is a factor in family production decisions. Although they have not employed such detailed economic data or sophisticated analytic methods, several other investigators have likewise shown that Mexican households with US migrants channel a significant portion of their remittances into the accumulation of income-producing assets (Massey et al. 1987; Trigueros and Rodríguez 1988; Escobar and Martínez 1990; Massey and Parrado 1994).

High wages available in the United States thus offer Mexicans an incentive to migrate not only because they yield higher expected lifetime earnings, but also because they offer poor families a way to loosen liquidity constraints and manage risks. By migrating internationally, poor families are able to gain access to scarce capital and initiate new productive enterprises at low risk.

The new economics of migration has also challenged the neoclassical assumption that higher income has a uniform effect in promoting migration at all socioeconomic levels. In the neoclassical view, individuals mi-

grate to achieve an absolute gain in lifetime earnings: $100 in extra income means the same to each actor regardless of his or her position in the socioeconomic hierarchy. Theorists of the new economics argue, in contrast, that households migrate not only to improve absolute income, but also to increase their incomes relative to others in the community. Through international migration, in other words, households attempt to ameliorate their sense of relative deprivation (Stark 1991).

Relative deprivation depends on where a household is located in the income distribution: the greater the share of income earned by households above it, the greater the sense of relative deprivation. As a result, households located toward the bottom of the income distribution are more likely to migrate than those situated toward the top, and places with unequal distributions are more likely to send migrants than those where income is equally distributed. As a result, $100 in additional income provides more of an incentive to migrate for poor households located in skewed income distributions than for poor households in equal distributions. The effect of a given expected income gain on behavior is not uniform across socioeconomic settings.

Stark and Taylor (1989) operationalize relative deprivation for a given household as the proportion of households in the income distribution with income greater than that of the household, times the average amount by which these incomes exceed the household's income. When they included this measure of relative deprivation in a structural probit model predicting the probability of undocumented migration to the United States from the Pátzcuaro region of Michoacán, they found that it had a very strong and positive effect. Their analysis controlled for absolute household income, the income gain expected from US migration, and other individual and household variables.

Stark and Taylor (1991b) also examined the degree to which relative deprivation predicted internal migration within Mexico. They hypothesized that internal migration should not be as effective in reducing relative deprivation because of the phenomenon of "reference group substitution." People who migrate to a Mexican urban area may generate remittances to improve their relative standing in the community, but they will also tend to compare themselves to urban Mexicans and to feel relatively deprived. Because Mexican rural and urban areas lie within a similar social, cultural, and economic setting, internal migrants end up substituting one reference group for another.

By migrating to the United States, however, migrants not only gain access to high wages and remittances capable of shifting their position in the local income distribution, they also move into a different society that constitutes a radically different frame of social and cultural reference. At least initially they do not see themselves as part of the destination society, and they view their menial work instrumentally as a tool, a means of earn-

ing money to enhance their status at home (see Piore 1979). Even though they understand that the jobs may be demeaning and poorly paid by US standards, they do not see those standards as applying to them because they do not imagine themselves to be part of US society: reference group substitution is minimized.

When Stark and Taylor (1991a) estimated a multinomial logit model to predict the relative odds of migrating internally, internationally, or not at all, they found that relative deprivation significantly raised the likelihood of US migration but had no effect on the probability of internal migration, consistent with their line of reasoning. Absolute income had a significant effect, in accordance with neoclassical theory; however, the index of relative deprivation provided additional explanatory power to improve the model's overall predictability.

Thus, although wage differentials may provide one incentive for international migration, systematic tests suggest that wage gaps are not the only factor behind international movement. Holding constant the effect of expected income, international migration reduces the risks faced by households, it reduces the capital constraints they face in inaugurating production, and it offers a way to ameliorate feelings of being relatively deprived. Based on the evidence available to date, therefore, the new economics of migration and the neoclassical model appear to complement each other in explaining international migration; both models are "correct" and either one by itself would constitute an incomplete explanation of international migration.

Segmented labor market theory

In contrast to neoclassical and new economic theory, both of which view international migration as originating in rational calculations made by individuals and families responding to market forces, segmented labor market theory sees immigration as demand-driven, built into the economic structure of advanced industrial societies (Piore 1979). Inherent tendencies in modern capitalism lead to a bifurcated labor market, creating a primary sector that produces jobs with secure tenure, high pay, generous benefits, and good working conditions, and a secondary sector typified by instability, low pay, limited benefits, and unpleasant or hazardous working conditions. Inherent tendencies within developed societies also tend to produce a shortage of workers willing to take jobs in the secondary sector, since there are few economic returns to experience, skill, or education. As a result, employers seek to recruit immigrants to fill secondary sector positions rejected by natives (Piore 1979). Immigration policies of the United States and Canada generally reinforce labor market segmentation by creating barriers to mobility for unauthorized migrants (Taylor 1992b).

Although segmented labor market theory has received considerable attention in the research literature, most studies have not addressed the issue of immigration per se. For many years, social scientists worked to identify primary and secondary sectors empirically by factor-analyzing job and worker characteristics, or by comparing wage equations estimated across occupational and industrial categories (Dickens and Lang 1985). Although some studies found results consistent with segmented labor market theory (Osterman 1975; Buchele 1976; Wright 1979; Carnoy and Rumberger 1980; Tolbert, Horan, and Beck 1980), others did not (Bibb and Form 1977; Zucker and Rosenstein 1981), and by the early 1980s segmented labor market research ground to an inconclusive halt.

A serious problem with these early studies was the ad hoc way that sector membership was operationalized, leading to instability in empirical estimates and charges that the definition of sector membership usually made the "finding" of lower returns to human capital in the secondary sector tautological (Hodson and Kaufman 1981). Some critics advocated discarding segmented labor market theory entirely (Cain 1976; Hodson and Kaufman 1982), but in the mid-1980s Dickens and Lang (1985) developed a novel methodological approach that overcame the logical flaws of earlier studies. Rather than attempting to operationalize sector membership in advance using a set of ad hoc criteria and complicated definitions, they specified a "switching model" that simultaneously estimated an equation for sector attachment and two sector-specific wage equations.

Their estimates revealed that two wage equations defined by an estimated switching equation fit the data considerably better than a single wage equation estimated using ordinary least squares (Dickens and Lang 1985). Consistent with segmented labor market theory, the equation for the primary sector was characterized by significant returns to experience, schooling, and metropolitan residence, whereas the secondary sector equation showed no apparent returns to human capital. They also found that primary and secondary sector jobs were allocated largely on the basis of race, with blacks being excluded from the latter on the basis of noneconomic criteria. Since the publication of this study, segmented labor market theory has gained new credibility (Dickens and Lang 1988), and dual-sector models have increasingly appeared in mainstream economics journals (Bulow and Summers 1986; Heckman and Hotz 1986; McDonald and Solow 1985).

Relatively few analysts have attempted to apply the segmented labor market model to the study of North American immigration. Indirect evidence from studies of wage attainment estimated for various groups of immigrants is generally inconclusive. If immigrant workers were recruited into the secondary labor market to work at unstable, poorly paid jobs with few mobility prospects, as hypothesized by Piore and others, then we would expect to observe lower returns to education, skills, and work experience compared with natives.

In a series of studies using cross-sectional data on legal and illegal immigrants, Chiswick has consistently found significant positive returns to human capital factors and a clear trajectory of rising wages with time spent in the United States (Chiswick 1978, 1979, 1984, 1988), a pattern observed also in Canadian data (see Chiswick and Miller 1988; Bloom and Gunderson 1991). In some cases, the rate of return exceeds that of natives. Although these findings appear to challenge segmented labor market theory, Borjas (1982, 1985, 1987) has criticized Chiswick's work on methodological grounds. Because Chiswick relies on cross-sectional data, his estimates confound the effects of human capital and time-since-arrival with trends in the quality of immigrant cohorts and changes in the pattern of selective emigration.

When data not subject to these limitations are employed to estimate wage regressions, studies have found attenuated effects of past labor market experience, education, and skills on US wage rates among Mexican immigrants working in the United States, consistent with the predictions of segmented labor market theory (Massey 1987a; Donato and Massey 1993; Lindstrom and Massey 1994; Donato, Durand, and Massey 1992a). The same studies, however, find significant returns to improvements in English-language ability and US experience.

These results are consistent with other studies showing that Mexican immigrants to the United States are negatively selected with respect to indicators of human capital, particularly education (Taylor 1986, 1987; Massey 1987b; Massey and García España 1987; Stark and Taylor 1991a). Because human capital is not rewarded in the US secondary labor market, Mexicans with skills and education have tended to migrate internally rather than internationally. This historical pattern, however, was disrupted in the 1980s by Mexico's economic crisis, which drastically reduced the returns to education in Mexico's economy. As a result, internal migrants are no longer positively selected with respect to education, and skilled Mexican workers have increasingly moved to the United States rather than to urban Mexico (Cornelius 1992; Fletcher and Taylor 1992).

The most direct and systematic test of segmented labor market theory was carried out by Portes and Bach (1985), who analyzed the experience of Mexican and Cuban immigrants in the United States. The investigators interviewed respondents as they arrived in 1973–74, and then again in 1976 and 1979. They defined primary sector workers as those working for non-Hispanic white (Anglo) employers in settings where the majority of other workers were also non-Hispanic and white. Secondary sector workers were defined as those working for Anglo employers in places where the majority of the workers were Hispanic or black.

Mexican immigrants were generally incorporated into the secondary sector after entry and remained there for the next six years with little intersector mobility. Those Mexicans who did manage to acquire primary

sector jobs did so on the basis of US experience and English-language ability gained prior to entry in 1973 or 1974 (i.e., on earlier trips as undocumented migrants). Sector of employment was not related to education, but those Mexicans who worked in the primary sector earned significantly higher incomes than their counterparts in the secondary sector. Despite their higher average incomes, however, Mexicans working in the primary sector experienced few returns to education, experience, or prior US residence. Immigrants in the secondary sector, in contrast, experienced gains in income from their work experience and prior US residence, but not from education.

Portes and Bach (1985) also analyzed changes in occupational status within each sector, and the trajectory of occupational mobility conformed more closely to the predictions of segmented labor market theory. As work experience, education, and occupational aspirations rose among immigrants in the primary sector, so did the socioeconomic status of their job; but only education predicted occupational status in the secondary sector and the rate of return to schooling was half that observed in the primary sector.

When they analyzed patterns of wage and occupational attainment among Cuban immigrants, Portes and Bach (1985) had to modify dual labor theory to incorporate a third sector: the ethnic enclave. This sector includes Cubans who worked for a Cuban boss or owner, usually in a company where most workers were also Cuban immigrants. Consistent with the predictions of segmented labor market theory, the researchers found that Cubans employed in the primary sector experienced significant returns to English ability, education, and experience, but that the secondary sector provided few rewards for skills, experience, or education. The enclave sector, in contrast, replicated many of the features of the primary sector and provided Cuban immigrants with significant returns to education and experience.

The Cuban enclave consists of businesses located in and around Miami that are owned and operated by Cuban entrepreneurs (Wilson and Martin 1982; Portes and Stepick 1993). The existence of a large, concentrated Cuban population creates a demand for specialized cultural products and services that Cuban entrepreneurs are uniquely qualified to fill. In addition, their privileged access to a pool of low-wage immigrant labor gives them an advantage when competing with firms outside the enclave.

Immigrants working in the enclave are apparently willing to trade low wages upon arrival for a greater chance of advancement and independence later on (Portes and Bach 1985). This implicit contract between employers and workers stems from the norm of ethnic solidarity, which suffuses and supports the enclave (Portes and Manning 1986; Portes and Rumbaut 1990). Social networks and contact with other entrepreneurs launch new immigrants on independent careers in small business, and, once established, these new entrepreneurs are expected to help and promote other immigrants in turn. Since the enclave requires a steady stream of new immigrant work-

ers willing to trade low initial wages for the possibility of later mobility, immigrant enclaves constitute another source of demand for immigrants stemming from labor market segmentation.

Sanders and Nee (1987) attempted to apply enclave theory to Chinese immigrants in the San Francisco Bay Area. Defining the enclave to include Chinese living in San Francisco, they found that whereas entrepreneurs received higher returns to human capital in the enclave than outside of it, manual workers did not, causing the investigators to question, or at least modify, the enclave version of segmented labor market theory. But Portes and Jensen (1987) countered that enclave membership could not be defined on the basis of residence; rather it depends on the ethnicity of one's employer. As they point out, many Cubans live in Miami (the home of the Cuban enclave) but work for Anglo employers alongside Anglo workers (in the primary sector) or for Anglo employers alongside minority workers (in the secondary sector).

When Portes and Jensen (1989) reestimated the three-sector model and incorporated data on the most recent wave of post-1980 Cuban immigrants, they replicated the earlier findings of Portes and Bach. They found that enclave membership conferred a different pattern of benefits for Cuban men than for Cuban women, however. Although ethnic enterprise provided an effective path of economic mobility for Cuban males, there was no such path for Cuban females, although they did receive higher net earnings compared to women working in other sectors.

Zhou and Logan (1989), examining Chinese immigrants in New York City, sought to avoid the definitional problems of Sanders and Nee; they used three alternative definitions of enclave membership: employment-based, residence-based, and industry-based. When they compared the experience of Chinese men and women, they found that females received no returns to human capital characteristics within the enclave, whether as entrepreneurs or workers, but that male immigrants working in the enclave were able to convert human capital into earnings at a rate comparable with those in the nonenclave economy, and that male entrepreneurs achieved significantly greater returns to human capital in the enclave than elsewhere.

Research thus suggests that urban labor markets are, in fact, segmented, but in cities with large immigrant populations they may be divided into three sectors rather than two, as originally hypothesized by Piore (1979). Logan, Alba, and McNulty (1994) have recently attempted to identify other ethnic enclaves in cities throughout the United States. They examined five Asian groups and three Hispanic groups in 17 metropolitan areas and found that enclaves were confined to a few low-wage industries with low capitalization, low levels of unionization, and large numbers of female workers. The typical immigrant enclave consisted of a combination of apparel

manufacturing and ethnic food processing; but three enclaves stood out for their unusual size and diversity: the Cuban economy of Miami, the Japanese economy of Honolulu, and the Korean economy of Los Angeles.

The accumulated evidence thus appears to indicate that US labor markets are indeed segmented; that immigrants are selectively excluded from the primary labor market and found disproportionately in the secondary labor market, where they earn limited returns to education, skills, and experience; but that immigrant enclaves provide significant returns to human capital and an alternative mobility ladder for immigrants in some cities, especially for male entrepreneurs. Confidence in these conclusions must be guarded, however, because most studies have not distinguished between primary and secondary labor markets in comparing the enclave with the mainstream economy, and none has employed the switching regression model of Dickens and Lang (1985). In addition, none has applied the enclave model to the largest immigrant group in the United States, Mexicans, despite the fact that Los Angeles, San Diego, El Paso, Houston, San Antonio, and Chicago all carry the demographic potential for enclave formation.

One area of extensive Mexican employment is US agriculture (see Mines, Boccalandro, and Gabbard 1992), but recent research casts doubt on whether enclave theory applies to the agrarian economy. In the United States, Mexican immigrant farmworkers are hired not by the growers themselves, but through labor contractors who are almost all Mexican. As employers in their own right, Mexican labor contractors might be considered to constitute an ethnic enclave nested within US agriculture. Rather than constituting such an enclave, however, Mexican labor contractors appear to function as a niche in the secondary labor market of US rural areas (Vandemann, Sadoulet, and de Janvry 1991; Taylor 1992b).

In general, contractors serve as revolving-door employers of new immigrants, paying significantly lower wages, offering fewer benefits, and providing less security compared to workers hired directly by growers, who are primarily Anglos. Rather than providing a mobility ladder for fellow immigrants, Mexican labor contractors are more likely to exploit the workers they employ than to offer opportunities for advancement. This state of affairs stems from the sharp asymmetry in market power between contractors and growers. As a result, the former are forced to extract a nearly invisible profit margin by exploiting a steady flow of new, undocumented workers from abroad (Taylor 1992b). Mexican farm labor contractors are the agents through which growers secure access to workers to fill the lowest-skilled, seasonal farm jobs at low cost.

The use of farm labor contractors was given impetus by the passage of the 1986 Immigration Reform and Control Act, which enacted penalties against employers who "knowingly" hire undocumented workers. Contractors serve as an effective buffer between the growers and US immigration

authorities (Martin and Taylor 1991; Taylor and Thilmany 1993). Since the contractors are usually legal immigrants, and the growers hire the contractors and not the farmworkers, farmers are protected from legal sanctions even though they may rely exclusively on an undocumented workforce. Labor contractors absorb the risk of sanctions, and for this service they extract a portion of the undocumented migrants' wages in compensation. In the same way, the contractors also shield growers from the requirements of US labor law.

Another failure of segmented labor market research is that it has not clearly linked immigration to a demand for unskilled workers arising from the intrinsic characteristics of the secondary labor market. According to Piore (1979), the principal means by which this demand is expressed is through foreign labor recruitment. Although some US immigrant flows clearly began in this way—including those from Mexico (Galarza 1964; Kiser and Woody 1979; Reisler 1976; Calavita 1992), the Philippines (McArthur 1979; Wong 1986), and Puerto Rico (Piore 1977)—others appear to have arisen spontaneously without the substantial involvement of labor recruiters (such as Korea, the Dominican Republic, and Colombia); and several other important immigrant flows (from Cuba, Vietnam, and Russia) began not through labor recruitment, but through refugee movements (see Zolberg, Suhrke, and Aguayo 1989).

A weaker statement of Piore's (1979) theory is that immigration is largely demand-driven, whether or not recruitment actually occurred. In statistical analyses that include variables defined for both sending and receiving nations, therefore, the latter should dominate in explanatory power; but this generally has not been the case. Frisbie (1975) found that farm wages and agricultural productivity in Mexico had a greater effect on illegal migration to the United States than farm wages and productivity in the United States. Likewise, Jenkins (1977) found that push factors in Mexico, taken together, were stronger than pull factors in the United States; and Blejer, Johnson, and Prozecanski (1978) found that most of the variation in size of immigrant flow between Mexico and the United States was explained by the rate of Mexican unemployment. Finally, holding constant economic conditions in both countries, Bean et al. (1990) showed that the size of the undocumented flow was strongly predicted by the number of Mexicans of labor force age.

In summary, although US labor markets generally appear to be divided into primary and secondary sectors as predicted by Piore, and while under special conditions some urban labor markets may be further segmented into an immigrant enclave as posited by Portes and Bach, it is not clear that labor market segmentation explains all or even most of the demand for immigrants. Recruitment represents one of several possible inducements to migrate, but immigration flows are also related to wage dif-

ferentials, capital constraints, and risk diversification, as discussed above. While segmented labor market theory complements the neoclassical and new economic models of migration, it clearly does not supplant them.

World systems theory

World systems theory argues that international migration follows directly from the globalization of the market economy (Portes and Walton 1981; Sassen 1988). As capitalism extends outward from core nations in Europe, North America, Oceania, and Japan, and as market relations penetrate countries of the developing and former communist world, noncapitalist patterns of social and economic organization are disrupted and transformed. In the process of market penetration, however, large numbers of people are displaced from secure livelihoods as peasant farmers, family artisans, and employees of state-owned industries, creating a mobilized population prone to migrate, both internally and internationally (Massey 1988).

The expansion of the market economy into ever-farther reaches of the globe is directed and coordinated from a relatively small number of global cities (Castells 1989; Sassen 1991). These sites manage production processes that are increasingly decentralized and scattered, with labor-intensive operations being located in low-wage countries and capital-intensive processes being allocated to high-wage areas. This geographic division of labor emerged gradually after World War II but accelerated after 1973, when profit margins fell and capital accumulation stagnated as a result of recession and inflation in core capitalist nations (Harvey 1990). The globalization of production, in turn, put downward pressure on wages, working conditions, and employment levels among workers with limited skills and education.

Although low-skill workers saw their prospects dim as a result of economic globalization, the prospects of high-skill workers brightened. Managing a global economy generates a strong demand for expertise in electronics, telecommunications, banking, finance, insurance, law, government, and science, and highly educated workers migrate to global cities to fill this demand. The congregation of high-income workers and wealthy capitalists in global cities creates a demand for ancillary workers in restaurants, hotels, construction, maintenance, and personal services. Since natives are reluctant to accept onerous jobs at low pay, and since service jobs cannot easily be shifted overseas, employers recruit immigrants into these positions. Once immigrant communities become established, they create their own jobs that further accentuate the demand for immigrant labor.

Although immigrants are drawn to global cities because of a demand that is built into the structure of the international economy, their movement is facilitated by lines of transportation and communication that arise

to connect global cities to production sites and markets overseas, and by cultural links that stem from the penetration of capitalist cultural products and social attitudes into peripheral societies. Thus, processes of economic globalization create a pool of mobile workers in developing countries and simultaneously connect them to labor markets in particular cities where their services are demanded.

The global market economy is predicated on the existence of a stable international system conducive to capitalist social and economic relations. The process of capital accumulation that drives economic growth in core nations benefits greatly from unhindered access to markets and natural resources scattered around the globe. In the past, this need for access and stability led European powers to impose colonial regimes on much of Asia, Latin America, and Africa. More recently, Europe, and especially the United States, have pursued diplomatic and military means to preserve the integrity of the international system, and thereby to protect overseas investments, ensure continued access to natural resources, defend lanes of transportation and communication, support political allies, and maintain sympathetic procapitalist regimes (Zolberg, Suhrke, and Aguayo 1989; Rumbaut 1991, 1992).

The colonial systems established by Europe in the eighteenth and nineteenth centuries proved to be politically inviable after 1945, and in the ensuing wave of decolonization, international migrants were created in large numbers (Zolberg, Suhrke, and Aguayo 1989). Some of these migrants were colonialists and their descendants who returned to Europe; others were refugees who sought to escape sectarian violence and ethnic persecution by fleeing to a neighboring country; and still others were colonial subjects who sought to settle in the core power because of close ties stemming from prior military service, government employment, foreign education, or intermarriage.

Although decolonization and national consolidation were particularly disruptive and thus conducive to the production of immigrants, other political events associated with the preservation and maintenance of the global political economy have also contributed to the international flow of migrants. Foreign policies and military interventions frequently go awry, leading to new flows of refugees directed to core capitalist nations. Even in the absence of military or political setbacks, the deployment of military personnel around the world creates social and economic connections that promote immigration to core countries (Rumbaut 1991, 1992).

Considerable empirical information has been presented in association with world systems theory, though the data marshaled to date tend to be illustrative rather than analytic. Theorists have presented facts consistent with the world systems model, yet key propositions generally have not been subject to systematic tests against competing hypotheses. With a few exceptions, analysts have not sought to link the ebbs and flows in the volume

of immigration across time or between countries to indicators of market penetration in developing regions, to the emergence of world cities in industrial nations, or to military or political entanglements overseas.

Although their study is rooted in neoclassical economics, Hatton and Williamson (1994) carry out an analysis that is relevant to hypotheses derived from world systems theory. Analyzing data from 11 European countries during the late nineteenth and early twentieth centuries, they examined the relationship between annual emigration and four theoretical variables: the share of each country's male labor force working in agriculture (an indicator of industrialization), the ratio of real wages at home and in destination countries (an indicator of the size of the wage gap), the rate of natural increase two decades earlier (an indicator of demographic pressure), and the relative number of emigrants already in the destination country (an indicator of network effects).

They found that most European countries experienced an "emigration cycle" characterized by an upswing in outmigration rates followed by a leveling off and then a downswing (see Ackerman 1976). Different variables predominated in explaining emigration at various phases of the cycle. Outmigration early in the cycle was caused by industrialization acting upon large cohorts of new workers. As outmigration grew, this effect was reinforced by a rising stock of migrants living abroad (the network effect discussed below). During the plateau and downswing phases of the cycle, the forces of industrialization and demography weakened and fluctuations in the flow of emigrants became linked to the size of the wage gap between sending and receiving countries.

Additional evidence linking economic development to emigration comes from studies carried out in Mexico. Roberts (1982) examined four agrarian communities located in different regions and found that the effects of agricultural development depended on the distribution and quality of farmland. When commercial crops and capital-intensive methods were introduced into areas with good soil, irrigated land, and an even distribution of farmland, rural incomes rose, risks to household income fell, and outmigration decreased; but when market-oriented development was introduced into regions with poor soil, irregular rainfall, and an unequal distribution of farmland, rural incomes fell and risks rose, leading families to diversify their incomes through international migration.

Arroyo and colleagues likewise showed that the introduction of commercial agriculture into poorly developed rural areas of the Mexican state of Jalisco promoted outmigration, whereas its insertion into well-developed rural areas and semiurban areas did not (Arroyo 1989; Arroyo, de León, and Valenzuela 1990). Thompson, Amón, and Martin (1986) similarly found that the development of an export tomato industry in the state of Sinaloa was not sufficient to reduce undocumented emigration to the United States,

and that, absent a shift in development policies, the liberalization of Mexico's agrarian sector could be expected to increase the pressures for outmigration. Zabin and Hughes (1994) argued that the employment of Mexicans in export agriculture lowers the costs and risks of US migration in two ways: by exposing them to more diverse social networks and information about the United States, and by providing stable, albeit low-wage employment to women and children, thereby allowing male household heads to migrate with lower risk to the family.

One study has examined the effect of agricultural modernization on outmigration in the Philippines. Findley (1987) demonstrated that the extent of agricultural commercialization had a significant positive effect on the likelihood of outmigration to Hawaii or Manila, but that it interacted with a community's general level of infrastructure. The relationship was strongest in communities with a high degree of social and economic infrastructure (many shops, stores, gas stations, hospitals, clinics, and family planning units), weaker in areas with a medium level of infrastructure development, and negative in communities with little infrastructure.

The available evidence thus suggests that industrialization and agricultural development (indicators of capitalist market penetration) are instrumental in initiating migratory flows, as predicted by world systems theory, particularly when they occur under unfavorable demographic and agrarian conditions, and near communities that are well connected to the larger world. The displacement of workers through development sets off a process whereby individuals and families search for higher wages and more diverse sources of income, and over time fluctuations in the size of the outflow become more strongly connected to international differentials in wage rates.

Ricketts (1987) has studied market penetration more closely by examining the effect of US direct foreign investment on the rate of outmigration to the United States from 18 Caribbean countries. Direct foreign investment was named by Sassen (1988) as a leading indicator of capitalist market penetration and the principal cause of emigration. Ricketts found that the annual rate of outmigration to the United States from 1970 to 1979 was strongly related to the growth in US investment from 1966 to 1977. This strong relationship persisted when he controlled for size of country, per capita income, and the rate of population growth, and the relationship was not significantly affected by the inclusion or exclusion of outliers from his sample of countries.

Foreign investment is often directed to export processing zones, special areas established by developing country governments that grant exemptions from tariffs on goods produced for export. Prior to the ratification of the North American Free Trade Agreement, Mexico had established such a zone near the US border. Within it, factories known as *maquiladoras* assembled goods using parts imported from the United States. When the fin-

ished products were reexported to the United States, tariffs were assessed only on the value added by assembly, essentially the cost of labor (see Wilson 1992).

Sassen (1988) and other world systems theorists have argued that export processing zones contribute to international migration by producing goods that compete with those made locally; by feminizing the workforce without providing factory-based employment opportunities for men; and by socializing women for industrial work and modern consumption without providing a lifetime income capable of meeting these needs. The result is the creation of a population that is socially and economically uprooted and prone to migration. When Davila and Saenz (1990) examined the effect of maquiladora employment on the monthly flow of Mexican undocumented immigrants to the United States, however, they found a negative relationship: employment growth in the maquila sector was followed by a reduction of undocumented migration one month later.

None of the studies cited examined the theoretical notion of global cities, a key element of world systems theory. Friedmann (1986) has proposed theoretical criteria by which such cities might be identified empirically: the existence of a major financial center, the presence of a transnational corporate headquarters, the presence of an international organization, the rapid growth of business services, the importance of the city as a manufacturing center, its importance as a transportation node, and its population size. When he applied these criteria to the United States, he identified three primary global cities (New York, Chicago, and Los Angeles) and three secondary global cities (Miami, Houston, and San Francisco).

Circumstantial evidence clearly suggests a strong link between these six global cities and immigration to the United States. According to the US Immigration and Naturalization Service (1993), New York received more immigrants in 1992 than any other US metropolitan area, followed in rank order by Los Angeles, Miami, Chicago, San Francisco, Washington, and Houston. In other words, the three primary global cities identified by Friedmann were ranked 1, 2, and 4 in terms of immigration, and the three secondary global cities were ranked 3, 5, and 7. The flow of immigrants into these six metropolitan areas averaged 14,000 during 1992, but the average number of immigrants going to the remaining metropolitan areas was under 2,300. In the United States, therefore, immigration is overwhelmingly directed to global cities.

The only global city that Friedmann (1986) identified in Canada was Toronto, which he classified as a secondary global city. According to Statistics Canada (1992), Toronto attracted some 30 percent of the country's 214,230 immigrants. After Toronto, the next largest cities are Montreal and Vancouver, which attracted 12 percent and 11 percent of all immigrants, respectively. Thus, roughly a third of all immigrants go to Canada's only

recognized global metropolis, and another third go to the second- and third-largest cities. Obviously Canadian immigration is directed toward those urban areas most strongly linked to the international economy.

Walker, Ellis, and Barff (1993) analyzed patterns of internal and international migration to the United States in an effort to confirm the labor market dynamics hypothesized by world systems theorists. If high-paying blue collar jobs are being reallocated to low-wage regions abroad, and labor markets within global cities are bifurcating into low-wage and high-wage sectors, then we should observe immigrants and white collar workers entering global cities in large numbers as blue collar workers depart. Further down the urban hierarchy, we should observe the entry of blue collar workers and the outmigration of white collar workers combined with little or no immigration.

This pattern is essentially what Walker and his colleagues observed in their analysis of internal and international migration from 1975 to 1980 across urban areas of the United States. Immigration flows were directed toward metropolitan areas that were experiencing a rapid growth in value added (i.e., global cities), but the arrival of immigrants and the rapid growth in value added were associated with a strong outmigration of blue collar workers. The migration of white collar workers was, in turn, linked to a high growth in value added but was not strongly affected by the rate of immigration. Comparable results were obtained by White and Imai (1992) using a simpler model.

These patterns correspond closely to state-level results reported by Frey (1994), who found that six key US states—California, New York, Texas, New Jersey, Illinois, and Massachusetts—attracted large numbers of international migrants and skilled native white workers while losing poor whites. Florida contradicted the general pattern of immigrant-receiving states by attracting all kinds of movers, immigrants as well as native white collar and blue collar workers.

As Rumbaut (1991) has pointed out, strong circumstantial evidence also links US immigration to American military and foreign policy entanglements overseas. Of the top 15 US immigrant-sending countries in 1992, five of the flows could be tied to a military presence, a political misadventure, or a military defeat: Vietnam, the Philippines, El Salvador, Korea, and Iran; and three more could be linked to US foreign policy concerns: the Soviet Union, Poland, and China (Immigration and Naturalization Service 1993). Arrivals from these eight countries comprised 37 percent of all immigrants to the United States.

Geopolitical concerns apparently played a key role in the initiation of migration between the Dominican Republic and the United States. Before 1961 annual emigration from that country averaged only a few hundred people per year, but afterward it mushroomed to over 10,000 annually. In

his memoirs, Ambassador John B. Martin (1966) relates how top US officials asked that he speed up visa-processing and loosen restrictions to allow more emigration after 1961. Fearing political instability and gains by left-wing political factions in the wake of dictator Rafael Trujillo's assassination, the US government sought to reduce political tensions by using emigration as a "safety valve" (Georges 1990; Grasmuck and Pessar 1991). This intervention was followed in 1965 by a full-scale invasion and occupation by US armed forces, and by 1966 the Dominican Republic was receiving more US aid per capita than any country but Vietnam (Black 1986).

Several statistical analyses have sought to quantify the connection between immigration and the presence of a US military base. Jasso and Rosenzweig (1990) estimated a multivariate model across various countries to demonstrate that the presence of a base significantly increases the number of persons admitted as wives and husbands of US citizens, the proportion of females among immigrants admitted as spouses of US citizens, and the size of a country's visa backlog. Likewise, Donato (1991) has shown that the number of men stationed in a country strongly predicts the proportion of women in the immigrant flow.

Thus, the limited empirical research to date generally supports world systems theory, but its theoretical propositions have not received sufficient analytic attention and it is difficult to draw firm conclusions. Although the paradigm yields clear and researchable hypotheses (summarized in Massey et al. 1993), with the exception of the studies by Ricketts (1987) and by Walker, Ellis, and Barff (1993), relatively little has been done to test these propositions systematically, and even less to contrast them with competing theoretical models.

The perpetuation of international migration

Network theory

Migrant networks are sets of interpersonal ties that connect migrants, former migrants, and nonmigrants in origin and destination areas through ties of kinship, friendship, and shared community origin. The existence of these ties is hypothesized to increase the likelihood of emigration by lowering the costs, raising the benefits, and mitigating the risks of international movement. Network connections constitute a valuable form of social capital that people draw upon to gain access to foreign employment and high wages (Choldin 1973; MacDonald and MacDonald 1974; Boyd 1989; Gurak and Caces 1992; Ho 1993).

The effect of social ties on rates and probabilities of emigration has been convincingly demonstrated by many analysts using a variety of datasets and methodologies. Students of historical migration between Europe and

the United States have long recognized a "family and friends effect," whereby the concentration of particular nationality groups in certain cities or regions dramatically increases the probability that other members of the same group will migrate there (Levy and Wadycki 1973). Whenever the number of prior immigrants or co-ethnics has been included as a regressor in aggregate models of immigration flows, analysts have found that it strongly predicts the rate of migration to the country, region, or city in question (Nelson 1959; Gallaway and Vedder 1971; Dunlevy and Gemery 1977, 1978; Dunlevy 1992; Hatton and Williamson 1994).

Two studies have analyzed settlement patterns among recent immigrants to the United States. Dunlevy (1991) estimated a model to predict the US state of destination for immigrants from 11 Caribbean and Latin American countries in 1987. In addition to the stock of each country's immigrants already resident in the state, he measured each state's average income, urbanization, population size, black percentage, mean temperature, distance to sending country, and border location. For most groups, the size of the migrant stock was the most important predictor of immigrant location, and once this variable was included in the equation the effects of other variables fell to insignificance or were markedly reduced.

Walker and Hannan (1989) undertook a similar analysis, but their model was dynamic rather than static and allowed the effect of the migrant stock to change over time. They estimated a pooled cross-section time-series model for 11 nationality groups across 50 US metropolitan areas from 1970 through 1979. Their model specified time-varying effects for income, employment, migrant stock, and lagged migration. Not only did they find strong evidence of a friends and family effect; they also determined that it varied over time and across countries. For three new immigrant groups—from Mexico, Jamaica, and the Dominican Republic—the effect of migrant stock grew stronger over time while the sensitivity of the streams to prior conditions diminished, thereby confirming the dynamic self-perpetuating nature of network migration.

This dynamic pattern is consistent with individual-level results developed by Massey (1987b). Using data gathered from men in four Mexican communities, he found that the likelihood of undertaking a first trip to the United States was increased by having a father with US migrant experience, but that it was also related to landlessness and to such personal characteristics as age, sex, education, and occupational status. The probability of undertaking subsequent trips, however, was unrelated to these individual or household characteristics; it depended entirely on the migratory experience of the individual and his social connection to other migrants. Over time, therefore, the migration decision became increasingly disconnected from social and economic conditions in the sending community and determined more by the accumulation of migration-related human capital and social capital in the form of network connections.

A number of other studies from Mexico, the Caribbean, and Central America suggest that having a social tie to someone living in the United States, or to someone with prior US migrant experience, greatly increases the probability of international movement. Many investigators have presented case studies documenting the growth and formation of migrant networks and their role in promoting international migration, including Wiest (1973, 1979, 1984), López (1986, 1988), Mines (1981, 1984), Dinerman (1982), Fjellman and Gladwin (1985), Massey et al. (1987), Chavez (1988, 1990), Georges (1990), Grasmuck and Pessar (1991), and Vega et al. (1991). Fewer researchers have demonstrated the importance of migrant networks quantitatively using representative data and multivariate models that include appropriate statistical controls.

Massey and García España (1987) employed a national sample of rural Mexican communities to show that the probability of emigration to the United States was strongly elevated by living in a household containing a prior US migrant or in a community where a large proportion of the people had been to the United States. These two network indicators were the strongest effects in their model, dominating all other social and economic indicators. Kossoudji (1992) did not seek to establish a link between networks and migration per se, but using a national sample of returned US migrants, she documented that the existence of network connections changed migratory behavior. Specifically, migrants with access to networks returned home sooner than those without such access. Being confident of their ability to come and go with ease, and to gain access to US employment whenever they needed it, migrants with strong network ties tended to take shorter and more frequent trips.

Taylor and colleagues documented the powerful effect of network connections directly, using survey data from two communities in Michoacán, Mexico. Taylor defined a US network connection as existing whenever a close relative was living in the United States at the beginning of the observation period. He found that such a tie strongly increased the odds of migrating to the United States during this period, controlling for the expected US/village earnings differential, household income, family size, age, sex, and prior migrant experience (Taylor 1987). Examining the effects of US versus Mexican network ties, Taylor found that US network connections strongly predicted international migration while Mexican ties predicted internal migration, again controlling for household size, number of workers, income, wealth, sex, age, education, and past migratory experience (Taylor 1986). This finding also held when an additional control for relative deprivation was added to the model (Stark and Taylor 1991b).

Even after controlling for the leading predictors of neoclassical and the new economics, therefore, network connections strongly predicted the likelihood of international movement. Neuman and Massey (1994) carried

Taylor's analysis one step further by defining networks as continuous variables rather than dichotomous connections. They conceptualized networks as a form of social capital and found that as the quality and quantity of social ties to US migrants increased, US wages and hours of work rose among Mexican undocumented immigrants, thereby increasing the potential returns from migration. Consistent with this fact, they found that the odds of making an initial US trip rose strongly as the amount of social capital increased.

Other studies also suggest that network connections carry the potential to significantly increase the economic benefits of foreign wage labor, and hence to raise the incentives for migration. Massey (1987a) found that having a social tie to a migrant family member significantly increased wage rates among immigrants from four Mexican communities; and using a larger random sample of ten Mexican communities, Donato, Durand, and Massey (1992a) discovered that family connections in the United States raised not only immigrants' wages, but also their hours of work and total monthly incomes. Greenwell, DaVanzo, and Burdiaga Valdez (1993) found that having kin contacts in the workplace increased the wages of male Salvadorans and Filipinos in Los Angeles, but not of females. Within the secondary sector, however, women's wages were higher and men's lower when working with relatives. The authors also found that network connections mediated the effect of human capital among men: those with good English skills earned more when they had social ties in the United States, but those with poor language skills earned less.

Several investigators have examined the effect of migrant networks in the Philippines using a household survey of Ilocos Norte, a region with a long history of outmigration to Manila and Hawaii. DeJong et al. (1983) found that having family members in Hawaii strongly increased respondents' stated intentions of migrating there. Findley (1987) showed that people in families with prior migrant experience were much more likely to make a trip to Manila or Hawaii than people in families without such experience. She also found that families living in communities with a high prevalence of former migrants were more likely to send out migrants themselves than families in places with few migrants. Root and DeJong (1991) found that households in direct contact with relatives living outside the community were more likely to export migrants than households not in direct contact with nonresident relatives. Finally, Caces (1986) drew upon a survey of Filipino immigrants in Hawaii to show that networks functioned effectively to guide them to jobs upon arrival, though only in occupations with high concentrations of immigrants.

In the United States, a literature on the "immigrant multiplier effect" has recently developed. US law allocates most immigrant visas on the basis of a family tie to someone already in the country (see Jasso and Rosenzweig

1990). Legal resident aliens within the United States gain the right to petition for the entry of spouses and children, subject to certain numerical restrictions; and immigrants who naturalize to US citizenship gain the right to petition for the entry of their spouses, unmarried children, and parents without numerical restriction, and for the entry of their married children and siblings (and their spouses and children) subject to numerical restriction.

By allocating visas along family lines, US law thus reinforces and formalizes the operation of migrant networks. Studies show that each new immigrant creates a large pool of potential immigrants, but that much of the potential is not realized (Jasso and Rosenzweig 1990; Arnold et al. 1989; Teitelbaum 1989). The gap between the theoretical number of relatives who might enter and the number who actually do enter occurs for several reasons: low rates of naturalization in many groups, the fact that some family members are already in the United States, and the fact that not all family members seek to exercise their rights of US entry.

Although family chaining may not be as great as theoretically possible, it is nonetheless significant. Jasso and Rosenzweig (1986) estimate the immigrant multiplier to be around 1.2 for each immigrant worker. That is, for each new immigrant admitted as a laborer rather than as a relative, 1.2 additional immigrants can be expected to arrive within ten years. Arnold et al. (1989) calculate that for each new Filipino immigrant, one additional family member will arrive in the future, and for each Korean immigrant, 0.5 family members will eventually come. As a result, even though immigrant flows often begin selectively with skilled workers, over time they tend to broaden, become less selective, and ultimately become dominated by relatives making use of family reunification provisions.

The potential for future immigration through such multiplier effects is suggested by the long backlog for legal entry visas from many countries. This backlog includes people who qualify for legal entry as family members but must wait their turn until a numerically restricted visa becomes available. As of 1985, the visa backlog was 362,395 from the Philippines, 142,434 from India, 134,778 from Korea, and 112,843 from China (Jasso and Rosenzweig 1990). In all of these countries the backlog was actually growing. The potential for network-based emigration is particularly strong in Mexico: its 1985 visa backlog stood at 366,820, and half of all respondents to a 1989 national survey said they had relatives living in the United States (Camp 1993: 45).

The evidence accumulated so far is thus strong and consistent in confirming the powerful role of migrant networks in structuring individual and household migration decisions, and in promoting and directing aggregate flows of immigrants. Indicators of migrant stock consistently predict settlement patterns of immigrants to the United States in both historical and contemporary data, and the possession of a kinship connection to a current or former international migrant increases the odds that individuals or families

will become involved in international migration themselves. Nonetheless, results thus far have come from a relatively small number of community case studies and a small number of quantitative analyses from a limited range of countries and datasets. In particular, more and better research on non-Mexican samples is clearly needed to confirm the generality of findings.

Cumulative causation

Cumulative causation refers to the tendency for international migration to perpetuate itself over time, regardless of the conditions that originally caused it. At the individual level, this self-perpetuation stems from the fact that each act of migration alters motivations and perceptions in ways that encourage additional migration. Migrants are changed by the experience of living and working in an advanced industrial economy. The knowledge and skills they acquire increase their productivity and raise their value to employers, and thereby elevate their expected wages. Through migration, they also gain valuable information about how to arrive, get around, and find work, thereby reducing the costs and risks of movement. In addition, they acquire tastes for modern consumer goods and new aspirations for socioeconomic mobility, thus changing their motivations. As a result of these changes, people who migrate once are quite likely to do so again. Although international migration may begin as a short-term strategy for income generation, one trip leads to another and over time the duration of trips grows and foreign experience accumulates (Piore 1979).

This line of reasoning is consistent with data from the Philippines, which show that the probability of migration is strongly increased by having prior migrant experience (DeJong et al. 1983; Findley 1987; Root and DeJong 1991). In addition, studies from Mexico show that the odds of US migration rise sharply as the amount of prior US experience grows (Taylor 1986, 1987; Massey 1987b; Massey et al. 1987; Stark and Taylor 1991a, 1991b). Massey (1985) has also shown that once Mexican men have migrated internationally, the odds are very high—at least 60 percent—that they will migrate again, and that the probability of making an additional trip rises with each trip already taken (Massey et al. 1987; Massey and Liang 1989; Donato, Durand, and Massey 1992b; Neuman and Massey 1994).

As the number of trips multiplies and their length increases, migrants also acquire more social and economic ties to the destination country and display a growing tendency toward settlement (Massey 1985; Massey et al. 1987). Proclivities for cumulative causation at the individual level thus lead to changes at the social structural level—the formation of branch communities at points of destination—sowing the seeds for the emergence of an ethnic enclave to act as an additional magnet for future immigration (Portes and Bach 1985; Portes and Manning 1986).

Cumulative causation at the individual level leads to other mechanisms of self-perpetuation at the social structural level, one of the most important being network formation. According to network theory, each act of migration creates the social structure necessary to sustain additional movement (Massey 1990). Migrants are linked to nonmigrants through social ties that carry reciprocal obligations for assistance based on shared understandings of kinship, friendship, and common community origin. Nonmigrants draw upon these ties to gain access to employment abroad. Every new migrant reduces the costs and risks of migration for a set of friends and relatives, and with these lowered costs and risks, they are induced to migrate, which further expands the set of people with ties abroad.

Illustrative data consistent with this theoretical model have been presented in descriptive studies by Massey and colleagues (Massey 1986; Massey et al. 1987; Massey, Goldring, and Durand 1994); but the specific linkages underlying the hypothesized cumulative causation have yet to be convincingly demonstrated. Although Massey, Goldring, and Durand (1994) show that the stock of migratory experience and the density of network connections expand as communities move from lower to higher levels of migratory prevalence, they did not sort out the causal ordering of network expansion and migration. In fact, to date no study has examined the interplay between individual actions and network growth that is hypothesized to build a dynamic momentum into international migratory flows. Although cumulative causation through network formation remains a plausible hypothesis consistent with circumstantial evidence, its base of empirical support is tenuous.

A second hypothesized mechanism of cumulative causation occurs through community income distributions. According to the new economics of migration, households engage in international labor not only to improve their absolute income, but also to increase income relative to others in the community; but in remitting earnings back home to family members, migrants also affect the distribution of income, thereby changing the relative deprivation experienced by others, which, in turn, affects their propensities to migrate. Through remittances, migrants change the socioeconomic context within which future migration decisions are made, creating a feedback loop. If foreign remittances allow migrant households to skip over others as they advance up the income distribution, then the relative deprivation of households below them will increase and these households will, in turn, become more likely to send workers abroad.

Stark, Taylor, and Yitzhaki (1986) compared two Mexican communities with different levels of US migratory participation. They found that when individuals from relatively few households migrated internationally, remittances had an unequalizing effect on the local income distribution; but when many households participated in migration, remittances had an equalizing

effect. Georges (1990) found comparable results when she compared two communities in the Dominican Republic. Her findings suggest that income inequality is low initially and then increases as a few households begin sending out migrants and gaining access to high US incomes; but eventually it moderates when a majority of households get involved in US migration; and in the end, the distribution of income becomes more equal as nearly all households participate in international labor.

Since relative deprivation varies directly with income inequality, its cumulative effect in causing US migration is low initially, then high, and then low once again. A reanalysis of Stark, Taylor, and Yitzhaki's (1986) data revealed, however, that this tendency toward diminishing relative deprivation is substantially mitigated if greater weight is given to households at the lower end of the income distribution (Stark, Taylor, and Yitzhaki 1988). If barriers to migration persist for low-income households, preventing them from achieving full access to US employment, then relative deprivation remains a significant cause of outmigration even at high levels of migratory prevalence.

Recent work by Taylor (1992a) also suggests that the direct effect of remittances on income distributions may understate their true unequalizing effect. Remittances have strong indirect effects because they put low-income households in a position to acquire income-producing assets. In a longitudinal analysis of data collected in two Mexican communities, Taylor (1992a) showed that a significant share of migrant remittances was invested in productive enterprises, and that these enterprises later produced income that exacerbated income inequality (see also Taylor and Wyatt 1993).

In other words, remittances not only drive up income inequality directly; they also increase it indirectly by promoting investment in assets, the income from which further accentuates income inequality. Evidence from Mexico, therefore, strongly suggests that international migration is caused cumulatively through feedback mechanisms operating via the local income distribution: migration brings remittances, which increase income inequality, which raises relative deprivation, which causes more migration.

Some researchers have argued that inequality in local landholding constitutes another mechanism by which migration is cumulatively caused. Many field studies suggest that land is an important spending goal of international migrants (Reichert 1981; Mines 1984; López 1986; Massey et al. 1987; Grasmuck and Pessar 1991; Taylor and Wyatt 1993). In most communities, however, the available land base is quite limited, and migration-induced demand leads to a rapid inflation of land values. Dependency theorists such as Wiest (1984) and Rubenstein (1983, 1992) point out that by gaining early access to high incomes, the first migrant families are able to gain privileged access to land; but as more households send migrants abroad and channel their remittances into such purchases, prices escalate out of

reach. As a result, land ownership becomes concentrated in the hands of a few successful migrants.

The concentration of land ownership carries a potential for cumulative causation for three reasons. First, to the extent that it indicates more landlessness, it means that a growing number of families are deprived of a means of support, thereby increasing the pressure for outmigration. Second, migrant households often use land less intensively than nonmigrants, purchasing it as an investment or as a token of prestige and letting it lie fallow or using it for less intensive activities such as cattle-grazing. To the extent that land is withdrawn from crop production, local demand for farm labor is reduced, once again increasing the pressure for outmigration. Finally, although some migrant families do continue active farming, they tend to use more capital-intensive methods, substituting machines, irrigation equipment, high-yield seeds, insecticides, and herbicides for hand labor, once again lowering the demand for farm labor.

Although circumstantial evidence linking migration to land inequality is available from several field studies in Mexico (Mines 1984; López 1986; Massey et al. 1987), the Dominican Republic (Georges 1990; Grasmuck and Pessar 1991), and the English Caribbean (Rubenstein 1983; Maingot 1991), empirical support for the hypothesis of cumulative causation is weak. Most of these studies are compromised by a lack of longitudinal or comparative data; inferences about growing inequality are based on the reports of informants or on observed differences in rates of landholding between migrant and nonmigrant families. From cross-sectional data, however, it is difficult to sort out which came first, land ownership or migration. An exception is provided by Reichert (1981), who traces land acquisition back to the point of initial US migration and then moves forward to document its concentration in the hands of a few legal migrants to the United States.

Unfortunately, no one has undertaken the kind of careful quantitative analysis of landholding that Taylor and colleagues have carried out to assess the interplay between migration and income inequality (Stark, Taylor, and Yitzhaki 1986, 1988; Taylor 1992a; Taylor and Wyatt 1993). The only study even to report a Gini index of land inequality is that of Georges (1990), and she concludes that international migration simply exacerbated a trend toward land concentration already underway because of government agricultural policies and national market conditions. Considerably more (and better) research is needed to establish the existence and extent of the causal link between international migration and land inequality.

The second link in the hypothesized chain of cumulative causation through land distribution is that migrant families use farmland less intensively, leading to the constriction of local labor opportunities and greater pressures for outmigration. Massey et al. (1987) documented a clear decline in farming among inhabitants of two rural Mexican communities as

they became more involved in the migratory process. Taylor and Wyatt (1993) and Taylor (1992a) also record in considerable detail the ongoing shift to cattle-raising by migrant households in Michoacán, Mexico. The association of international migration with cattle-raising has also been documented in other communities of Mexico (Reichert 1981) and in the Dominican Republic (Georges 1990; Grasmuck and Pessar 1991). But Griffith (1986) reports no differences between US migrants and nonmigrants in Jamaica with respect to land owned, land cultivated, or involvement in livestock production.

The last link in the chain of cumulative causation involves the use of capital-intensive methods among migrants who do farm. Both Massey et al. (1987) and Jones (1992) show that migrant households are more likely than nonmigrant households to make productive agricultural investments, and that the propensity to use such inputs as machines, fertilizers, and insecticides rises as families become more involved in international migration. But Massey et al. (1987) also show that while the use of family labor falls with greater involvement, the employment of nonfamily labor rises. Fletcher and Taylor (1992) likewise found a shift away from family-intensive farming toward a greater use of tractors, herbicides, and hired labor—all family-labor substitutes. In addition, Griffith (1986) reported a greater use of hired labor by migrant households in Jamaica, and Wood and McCoy (1985) found a marginal increase in the use of labor by migratory households on five Caribbean islands.

In summary, the hypothesis of cumulative causation through land inequality must be regarded as plausible and broadly consistent with the evidence, but still unproven. The various links in the causal chain are tenuously connected to empirical evidence, and no study has yet demonstrated a quantitative connection between land inequality and an elevated propensity for international migration among households.

One final avenue of cumulative causation that has been discussed in the theoretical literature is culture. According to postmodern theorists, the circulation of people, goods, and ideas creates a new transnational culture that combines values, behaviors, and attitudes from sending and receiving societies to create a new, largely autonomous social space that transcends national boundaries (Georges 1990; Rouse 1989, 1990, 1991, 1992; Goldring 1992a, 1992b). This transnationalization of culture changes the context within which migration decisions are made.

Although the new culture is complex and multifaceted, it is characterized by several distinct features that reinforce and perpetuate international movement. First, migrants display a widely admired lifestyle that others are drawn to emulate. Materially successful migrants provide a powerful demonstration effect, especially for the young, based on their enhanced ability to consume goods and purchase property, and they are instrumental

in spreading the values of consumerism throughout the community. Second, although some of migration's attractiveness is material, it also acquires a strong normative component. Over time, foreign labor becomes integrated into the structure of values and expectations, and young people contemplating entry into the labor force expect to migrate internationally in the normal course of events. Third, as migration assumes a greater role in the community, it becomes increasingly important as a rite of passage for young men, providing an accepted means of demonstrating worthiness, ambition, and manhood. Finally, as women come to participate in the migration process, they gain greater power and influence within the family through their contributions to household income. While abroad, they come into contact with more egalitarian gender relations and they push for greater equality. Realizing that patriarchal constraints on female autonomy are lower in modern industrial societies, they encourage activities that cement ties to the receiving society, such as the purchase of homes in destination communities, and actively work to promote settlement abroad.

Over time and with extensive movement back and forth, therefore, a "culture of migration" emerges that is distinct from the culture of both sending and receiving countries. Although cultural effects are difficult to measure and quantify, elements of this culture have been widely observed in field studies in a variety of national and community settings. Many observers have commented on the expansion of consumerism in migrant communities, including fieldworkers in Mexico (Wiest 1973, 1979; Dinerman 1982; Mines 1981; López 1986; Reichert 1981, 1982; Massey et al. 1987; Goldring 1992a; Alarcón 1992; Smith 1992; Fletcher and Taylor 1992; Durand 1994), the Dominican Republic (Georges 1990; Grasmuck and Pessar 1991), and the English Caribbean (Rubenstein 1979, 1983; Wood and McCoy 1985). Field investigators have also mentioned the emergence of social norms promoting international movement, especially as a rite of passage for young men (Mines 1981; Reichert 1982; Massey et al. 1987; Georges 1990; Rouse 1990, 1992; Alarcón 1992; Goldring 1992b; Durand 1994). Finally, several analysts have reported shifts in gender roles and a stronger emphasis on foreign settlement as a result of the incorporation of women into the migratory process (Georges 1990; Hondagneu-Sotelo 1992; Grasmuck and Pessar 1991; Goldring 1992a, 1992c). Although the hypothesized effect of cultural change in cumulatively promoting migration may be difficult to quantify and objectively assess, the large number of field reports documenting this phenomenon lend it considerable credibility.

Theories of international migration reconsidered

Our systematic review of empirical studies of international migration in the North American system has produced little substantial evidence that would lead to the rejection of any of the theoretical models we have surveyed. On

the contrary, each model received at least some empirical support, suggesting that each theory captures an element of truth. Although the base of empirical research is more convincing for some theories than for others, we rarely encountered negative evidence. Rather, the characteristic defect in the research was an absence of evidence, not the presence of contrary evidence.

What is unclear is how well the various models perform against each other, and how much of an independent contribution to explanatory power each model might retain in a simultaneous examination of theoretical propositions. For the most part, world systems theory, dual labor market theory, and the theory of cumulative causation have not been systematically compared against competing models. Extensive comparisons have been conducted to evaluate the relative efficacy of neoclassical economics, the new economics, and network theory, and on balance each of these theories displays its relevance in direct comparisons with the others. Controlling for relative deprivation and expected wage differentials, networks retain their importance; controlling for network connections and wage differentials, relative deprivation is still found to predict international movement; and controlling for relative deprivation and network connections, wage differentials strongly predict the odds of migration.

Despite a great deal of supportive circumstantial evidence, the specific mechanisms underlying cumulative causation have not been modeled or compared with the predictions of other models, with the partial exception of those mechanisms operating through income distributions. Principal goals of future research should be to integrate segmented labor market theory and world systems theory with the other theoretical models; to carry out comprehensive empirical tests that systematically test the validity of competing propositions; and to specify more clearly and quantify the feedback loops by which migration is cumulatively caused.

Our review uncovered other deficiencies in the literature. Far too much research is centered in Mexico, which because of its unique relationship to the United States may be unrepresentative of broader patterns and trends. Even within Mexico, a great deal has been generalized from a small set of studies concerning a handful of sending communities conducted by relatively few investigators. Within Mexico, new researchers need to gather information from a broader sample of communities. Within the field generally, more attention needs to be devoted to other prominent sending countries, such as the Philippines, the Dominican Republic, Jamaica, Colombia, El Salvador, Korea, and China. Research on these countries should include analyses of individual sending communities as well as studies of aggregate rates and flows.

Research within each paradigm can also be improved. Studies carried out under neoclassical economics should employ expected wages (wages times employment rates) as the leading explanatory factor, not observed

wages as has been done to this point. Research on the new economics of migration should relate migration decisions directly to indicators of market failures, such as high interest rates, the absence of insurance coverage, or a lack of credit. Research on segmented labor market theory should attempt to adapt the switching regression model of Dickens and Lang to the three-sector model developed by Portes and Bach, and it should broaden the study of enclaves beyond Cubans in Miami to consider other possible enclaves, beginning with those identified by Logan and coauthors. Investigators of world systems theory should expand Ricketts's analysis to a broader sample of countries and dates using a better-controlled study, and they should replicate the study of Hatton and Williamson for the modern period. Network theory should move beyond dichotomous indicators of network connections to measure networks as a form of social capital that varies continuously with respect to quality and quantity. Finally, greater effort must be made to compile multilevel longitudinal data files, which ultimately will be needed to model linkages specified under the theory of cumulative causation.

Based on our review of the North American evidence, we are able to offer a preliminary synthesis of international migration theory. According to our reading of the evidence, international migration originates in processes of economic growth and political transformation within the context of a globalizing market economy (world systems theory). The penetration of markets into peripheral nations disrupts noncapitalist modes of social and economic organization and causes widespread labor displacement, creating a mobile population that actively searches for a means of improving income, acquiring capital, or controlling risks (neoclassical economics and the new economics of migration).

In core nations, postindustrial development leads to a bifurcation of the labor market, creating a secondary sector of jobs with low pay, unstable conditions, and few opportunities for advancement (dual labor market theory). Such bifurcation is particularly acute in global cities, where a congregation of managerial, administrative, and technical expertise leads to a concentration of income and a strong ancillary demand for low-wage services (world systems theory). Because natives shun secondary sector jobs, employers rely on immigrant workers, at times initiating the immigrant flows directly through recruitment (dual labor market theory).

Recruitment often is not needed, however, because the same processes of economic globalization that create mobile populations in developing regions, and that generate a demand for their services in global cities, also foment links of transportation, communication, and culture to make their movement possible, indeed likely (world systems theory). International movement is further caused by foreign policy and military entanglements that reflect the need of core nations to maintain international stability and security (world systems theory), which results in flows of refugees and military dependents.

In short, individuals and families respond to changing circumstances set in motion by structural transformations of their societies, both political and economic. In moving they seek to raise incomes, accumulate capital, and control risk by following international routes of transportation and communication to global cities where secondary sector jobs may be had.

Once begun, the flows display a strong tendency to become self-perpetuating. Each act of migration contributes to the expansion of migrant networks and sets off a process of social capital accumulation that makes additional movement more likely (network theory). At the same time, the regional concentration of immigrants creates a "family and friends" effect that further encourages the channeling of immigrants to some places and not others; and if enough migrants arrive under the right conditions it can also lead to the formation of an enclave economy, which further augments the demand for immigrant workers and creates a safe haven for their arrival (enclave theory). The spread of migratory behavior within sending communities sparks other structural changes, shifting distributions of income and land and modifying local cultures in ways that promote additional migration (theory of cumulative causation).

During the initial phases of emigration from any particular sending country, the effects of market penetration, network formation, and cumulative causation predominate in explaining the flows, but as migration reaches high levels and development moves societies toward urban, industrial economies, the costs and risks of movement drop to low levels and migration is increasingly determined by international wage differentials (neoclassical economics). As economic growth in sending regions occurs and emigration proceeds, international wage gaps gradually close and markets for capital, credit, insurance, and futures become more accessible, lowering the incentives for movement. If the sending country is ultimately integrated into the international market as a developed, urbanized economy, net migration ceases and the former sending country may itself become a net importer of immigrant labor.

References

Ackerman, Sune. 1976. "Theories and methods of migration research," in Harald Runblom and Hans Norman (eds.), *From Sweden to America*. Minneapolis: University of Minnesota Press, pp. 19–75.

Adelman, Irma, J. Edward Taylor, and Stephen Vogel. 1988. "Life in a Mexican village: A SAM perspective," *The Journal of Development Studies* 25: 5–24.

Alarcón, Rafael. 1992. "Norteñización: Self-perpetuating migration from a Mexican town," in Jorge Bustamante, R. Hinojosa, and Clark Reynolds (eds.), *U.S.–Mexico Relations: Labor Market Interdependence*. Stanford: Stanford University Press, pp. 302–318.

Amemiya, T. 1985. *Advanced Econometrics*. Cambridge: Harvard University Press.

Arnold, Fred, Benjamin V. Cariño, James T. Fawcett, and Insook Han Park. 1989. "Estimating the immigration multiplier: An analysis of recent Korean and Filipino immigration to the United States," *International Migration Review* 23: 813–838.

Arroyo, Jesús. 1989. *El Abandono Rural*. Guadalajara: Editorial Universidad de Guadalajara.

———, Adrian de León, and Basilia Valenzuela. 1990. "Patterns of migration and regional development in the state of Jalisco, Mexico," in Sergio Díaz-Briquets and Sidney Weintraub (eds.), *Regional and Sectoral Development in Mexico as Alternatives to Migration*. Boulder: Westview Press, pp. 49–90.

Bean, Frank D., Harley L. Browning, and W. Parker Frisbie. 1984. "The sociodemographic characteristics of immigrant status groups: Implications for studying undocumented migrants," *International Migration Review* 18: 672–691.

———, Thomas J. Espenshade, Michael J. White, and Robert F. Dymowski. 1990. "Post-IRCA changes in the volume and composition of undocumented migration to the United States: An assessment based on apprehensions data," in Frank D. Bean, Barry Edmonston, and Jeffrey S. Passel (eds.), *Undocumented Migration to the United States: IRCA and the Experience of the 1980s*. Washington, D.C.: The Urban Institute Press, pp. 111–158.

Bibb, Robert, and William Form. 1977. "The effects of industrial, occupational, and sex stratification on wages in blue-collar labor markets," *Social Forces* 55: 974–996.

Black, Jan K. 1986. *The Dominican Republic: Politics and Development in an Unsovereign State*. Boston: Allen and Unwin.

Blejer, Mario I., Harry G. Johnson, and Arturo C. Prozecanski. 1978. "An analysis of the economic determinants of legal and illegal Mexican migration to the United States," *Research in Population Economics* 1: 217–231.

Bloom, David E., and Morley Gunderson. 1991. "An analysis of the earnings of Canadian immigrants," in John M. Abowd and Richard B. Freeman (eds.), *Immigration, Trade, and the Labor Market*. Chicago: University of Chicago Press, pp. 321–342.

Borjas, George J. 1982. "The earnings of male Hispanic immigrants in the United States," *Industrial and Labor Relations Review* 35: 343–353.

———. 1985. "Assimilation, changes in cohort quality and the earnings of immigrants," *Journal of Labor Economics* 4: 463–489.

———. 1987. "Self-selection and the earnings of immigrants," *American Economic Review* 77: 532–553.

Boyd, Monica. 1989. "Family and personal networks in international migration: Recent developments and new agendas," *International Migration Review* 23: 638–670.

Bray, David. 1984. "Economic development: The middle class and international migration in the Dominican Republic," *International Migration Review* 18: 217–236.

Buchele, Robert. 1976. *Jobs and Workers: A Labor Market Segmentation Perspective of the Work Experience of Young Men*. Doctoral dissertation, Department of Economics, Harvard University.

Bulow, Jeremy I., and Lawrence H. Summers. 1986. "A theory of dual labor markets with application to industrial policy, discrimination, and Keynesian unemployment," *Journal of Labor Economics* 4: 376–414.

Caces, M. Fe. 1986. "Immigrant recruitment into the labor force: Social networks among Filipinos in Hawaii," *Amerasia* 13: 23–28.

Cain, Glenn. 1976. "The challenge of segmented labor market theories to orthodox theory," *Journal of Economic Literature* 14: 1215–1257.

Calavita, Kitty. 1992. *Inside the State: The Bracero Program, Immigration, and the I.N.S.* New York: Routledge.

Camp, Roderick. 1993. *Politics in Mexico*. New York: Oxford University Press.

Carnoy, M., and R. Rumberger. 1980. "Segmentation in the U.S. labor market: Its effects on the mobility and earnings of whites and blacks," *Cambridge Journal of Economics* 4: 117–132.

Castells, Manuel. 1989. *The Informational City: Information Technology, Economic Restructuring and the Urban-Regional Process*. Oxford: Basil Blackwell.

Castillo-Freeman, Alida J., and Richard B. Freeman. 1992. "When the minimum wage really bites: The effect of the U.S.-level minimum wage on Puerto Rico," in George J. Borjas and Richard B. Freeman (eds.), *Immigration and the Work Force: Economic Consequences for the United States and Source Areas*. Chicago: University of Chicago Press, pp. 177–212.

Chavez, Leo R. 1988. "Settlers and sojourners: The case of Mexicans in the United States," *Human Organization* 47: 95–108.

———. 1990. "Coresidence and resistance: Strategies of survival among undocumented Mexicans and Central Americans in the United States," *Urban Anthropology* 19: 31–61.

Chiswick, Barry R. 1978. "The effect of Americanization on the earnings of foreign-born men," *Journal of Political Economy* 86: 897–921.

———. 1979. "The economic progress of immigrants: Some apparently universal patterns," in William Feller (ed.), *Contemporary Economic Problems*. Washington, D.C.: The American Enterprise Institute, pp. 357–399.

———. 1980. "The earnings of white and coloured male immigrants in Britain," *Economica* 47: 81–87.

———. 1984. "Illegal aliens in the United States labor market: An analysis of occupational attainment and earnings," *International Migration Review* 18: 714–732.

———. 1988. *Illegal Aliens: Their Employment and Employers*. Kalamazoo: Upjohn Institute for Employment Research.

———, and Paul W. Miller. 1988. "Earnings in Canada: The roles of immigrant generation, French ethnicity, and language," in T. Paul Schultz (ed.), *Research in Population Economics*, Volume 6. Greenwich: JAI Press, pp. 183–228.

Choldin, Harvey M. 1973. "Kinship networks in the migration process," *International Migration Review* 7: 163–176.

Conroy, Michael E. 1980. "Socio-economic incentives for migration from Mexico to the United States: Cross-regional profiles,1969–78," paper presented at the Annual Meeting of the Population Association of America, 11 April, Denver.

Cornelius, Wayne A. 1992. "From sojourners to settlers: The changing profile of Mexican labor migration to California in the 1980s," in Jorge Bustamante, R. Hinojosa, and Clark Reynolds (eds.), *U.S.–Mexico Relations: Labor Market Interdependence*. Stanford: Stanford University Press, pp. 155–195.

Corona, Rodolfo. 1993. "Migración permanente interestatal e internacional, 1950–1990," *Comercio Exterior* 43, no. 8: 750–763.

Cuthbert, Richard W., and Joe B. Stevens. 1981. "The net economic incentive for illegal Mexican migration: A case study," *International Migration Review* 15: 541–549.

Davila, Alberto, and Rogelio Saenz. 1990. "The effect of maquila employment on the monthly flow of Mexican undocumented immigration to the U.S., 1978–1982," *International Migration Review* 24: 96–107.

DeJong, Gordon F., et al. 1983. "International and internal migration decision making: A value-expectancy based analytical framework of intentions to move from a rural Philippine province," *International Migration Review* 17: 470–484.

Dickens, William T., and Kevin Lang. 1985. "A test of dual labor market theory," *American Economic Review* 75: 792–805.

———. 1988. "The reemergence of segmented labor market theory," *American Economic Review* 78: 129–134.

Dinerman, Ina R. 1982. *Migrants and Stay-at-Homes: A Comparative Study of Rural Migration from Michoacán, México*. Monographs in U.S.–Mexican Studies No. 5. La Jolla: Program in United States–Mexican Studies, University of California at San Diego.

Donato, Katharine M. 1991. "Understanding U.S. immigration: Why some countries send women and others men," in D. Gabbacia (ed.), *Seeking Common Ground: Women Immigrants to the United States*. Westport: Greenwood, pp. 159–184.

Donato, Katharine M., Jorge Durand, and Douglas S. Massey. 1992a. "Changing conditions in the U.S. labor market: Effects of the Immigration Reform and Control Act of 1986," *Population Research and Policy Review* 11: 93–115.

———. 1992b. "Stemming the tide? Assessing the deterrent effects of the Immigration Reform and Control Act," *Demography* 29: 139–157.

Donato, Katharine M., and Douglas S. Massey. 1993. "Effect of the Immigration Reform and Control Act on the wages of Mexican migrants," *Social Science Quarterly* 74: 523–541.

Dunlevy, James A. 1991. "On the settlement patterns of recent Caribbean and Latin immigrants to the United States," *Growth and Change* 22: 54–67.

———. 1992. "The role of nationality-specific characteristics on the settlement patterns of late nineteenth century immigrants," *Explorations in Economic History* 29: 228–249.

Dunlevy, James A., and Henry A. Gemery. 1977. "The role of migrant stock and lagged migration in the settlement patterns of nineteenth century immigrants," *Review of Economics and Statistics* 59: 137–144.

———. 1978. "Economic opportunity and the response of 'old' and 'new' migrants to the United States," *Journal of Economic History* 38: 901–917.

Durand, Jorge. 1994. *Más Allá de la Linea: Patrones Migratorios entre México y Estados Unidos.* México, D.F.: Consejo Nacional para la Cultura y las Artes.

———, and Douglas S. Massey. 1992. "Mexican migration to the United States: A critical review," *Latin American Research Review* 27: 3–42.

Escobar, Agustín, and María de la O. Martinez. 1990. "Small-scale industry and international migration in Guadalajara, Mexico," Working Paper No. 53. Washington, D.C.: Commission for the Study of International Migration and Cooperative Economic Development.

Espenshade, Thomas J. 1990. "Undocumented migration to the United States: Evidence from a repeated trials model," in Frank D. Bean, Barry Edmonston, and Jeffrey S. Passel (eds.), *Undocumented Migration to the United States: IRCA and the Experience of the 1980s.* Washington, D.C.: The Urban Institute Press, pp. 159–182.

Findley, Sally E. 1987. "An interactive contextual model of migration in Ilocos Norte, the Philippines," *Demography* 24: 163–190.

Fjellman, Stephen M., and Hugh Gladwin. 1985. "Haitian family patterns of migration to south Florida," *Human Organization* 44: 301–312.

Fleisher, Belton M. 1963. "Some economic aspects of Puerto Rican migration to the United States," *Review of Economics and Statistics* 45: 2245–2253.

Fletcher, Peri, and J. Edward Taylor. 1992. "Migration and the transformation of a Mexican village house economy," paper presented at the Conference on New Perspectives on Mexico–U.S.Migration, University of Chicago, Center for Latin American Studies, 23–24 October.

Frey, William H. 1994. "The new white flight," *American Demographics* 16, no. 4: 40–51.

Friedmann, John. 1986. "The world city hypothesis," *Development and Change* 17: 69–83.

Frisbie, W. Parker. 1975. "Illegal migration from Mexico to the United States: A longitudinal analysis," *International Migration Review* 9: 3–13.

Funkhouser, Edward. 1992. "Mass emigration, remittances, and economic adjustment: The case of El Salvador in the 1980s," in George J. Borjas and Richard B. Freeman (eds.), *Immigration and the Work Force: Economic Consequences for the United States and Source Areas.* Chicago: University of Chicago Press, pp. 135–177.

Galarza, Ernest. 1964. *Merchants of Labor: The Mexican Bracero Story.* Santa Barbara: McNally and Loftin.

Gallaway, Lowell E., and Richard K. Vedder. 1971. "The increasing urbanization thesis—Did 'new immigrants' to the United States have a particular fondness for urban life?" *Explorations in Economic History* 8: 305–319.

Georges, Eugenia. 1990. *The Making of a Transnational Community: Migration, Development, and Cultural Change in the Dominican Republic.* New York: Oxford University Press.

Goldring, Luin P. 1992a. "La migración México–EUA y la transnacionalización del espacio político y social: Perspectivas desde el México rural," *Estudios Sociológicos* 10, no. 29: 315–340.

———. 1992b. "Gendered memory: Reconstructions of the village by Mexican transnational

migrants," paper presented at the 8th World Congress of Rural Sociology, University Park, Pennsylvania, 11–16 August.

———. 1992c. "Blurring borders: Community and social transformation in Mexico–U.S. migration," paper presented at the Conference on New Perspectives on Mexico–U.S. Migration, University of Chicago, Center for Latin American Studies, 23–24 October.

Grasmuck, Sherri and Patricia R. Pessar. 1991. *Between Two Islands: Dominican International Migration*. Berkeley: University of California Press.

Greenwell, Lisa, Julie DaVanzo, and R. Burdiaga Valdez. 1993. "Social ties, wages, and gender among Salvadorean and Filipino immigrants in Los Angeles," Working Paper, Rand Corporation, Santa Monica.

Gregory, Peter. 1986. *The Myth of Market Failure: Employment and the Labor Market in Mexico*. Baltimore: Johns Hopkins University Press.

Griffith, David C. 1986. "Social organizational obstacles to capital accumulation among returning migrants: The British West Indies temporary labor program," *Human Organization* 45: 34–42.

Griffiths, Stephen L. 1979. "Emigration and entrepreneurship in a Philippine peasant village," *Papers in Anthropology* 20: 127–143.

Grindle, Merilee S. 1988. *Searching for Rural Development: Labor Migration and Employment in Mexico*. Ithaca: Cornell University Press.

Gurak, Douglas T., and Fe Caces. 1992. "Migration networks and the shaping of migration systems," in Mary M. Kritz, Lin Lean Lim, and Hania Zlotnick (eds.), *International Migration Systems: A Global Approach*. Oxford: Clarendon Press, pp. 150–176.

Harvey, David. 1990. *The Condition of Postmodernity*. Oxford: Basil Blackwell.

Hatton, Timothy J., and Jeffrey G. Williamson. 1992. "International migration and world development: A historical perspective," *NBER Working Paper Series on Historical Factors in Long Run Growth*, No. 41. Cambridge: National Bureau of Economic Research.

———. 1994. "What drove the mass migrations from Europe in the late nineteenth century?" *Population and Development Review* 20, no. 3: 533–559.

Heckman, James J., and V. Joseph Hotz. 1986. "An investigation of the labor market earnings of Panamanian males: Evaluating the sources of inequality," *Journal of Human Resources* 21: 507–542.

Hernández-Cruz, Juan E. 1985. "Migración de retorno o circulación de obreros boricuas?" *Revista de Ciencias Sociales* 24: 81–110.

———. 1986. "Reintegration of circulating families in southwestern Puerto Rico," *International Migration* 24: 397–410.

Ho, Christine G. T. 1993. "The internationalization of kinship and the feminization of Caribbean migration: The case of Afro-Trinidadian immigrants in Los Angeles," *Human Organization* 52: 32–40.

Hodson, Randy, and Robert L. Kaufman. 1981. "Circularity in the dual economy: A comment on Tolbert, Horan, and Beck, 1980," *American Journal of Sociology* 86: 881–887.

———. 1982. "Economic dualism: A critical review," *American Sociological Review* 47: 727–739.

Hondagneu-Sotelo, Pierette. 1992. "Overcoming patriarchal constraints: The reconstruction of gender relations among Mexican immigrant women and men," *Gender and Society* 6: 393–415.

Hope, Elizabeth M. Thomas. 1986. "Transients and settlers: Varieties of Caribbean migrants and the socio-economic implications of their return," *International Migration* 24: 559–572.

Immigration and Naturalization Service. 1992. *1991 Statistical Yearbook of the Immigration and Naturalization Service*. Washington, D.C.: US Government Printing Office.

———. 1993. *1992 Statistical Yearbook of the Immigration and Naturalization Service*. Washington, D.C.: US Government Printing Office.

Jackson, Philip. 1984. "Migration and social change in Puerto Rico," in C. Clarke, D. Ley, and C. Peach (eds.), *Geography and Ethnic Pluralism*. London: George Allen and Unwin, pp. 195–213.

Jasso, Guillermina, and Mark R. Rosenzweig. 1986. "Family reunification and the immigra-

tion multiplier: U.S. immigration law, origin-country conditions, and the reproduction of immigrants," *Demography* 23: 291–311.

———. 1990. *The New Chosen People: Immigrants in the United States*. New York: Russell Sage.

Jenkins, J. Craig. 1977. "Push/pull in recent Mexican migration to the U.S," *International Migration Review* 11: 178–189.

Jones, Richard C. 1989. "Causes of Salvadoran migration to the United States," *The Geographical Review* 79: 183–194.

———. 1992. "U.S. migration: An alternative mobility ladder for rural central Mexico," *Social Science Quarterly* 73: 496–510.

Kiser, G., and M. Woody. 1979. *Mexican Workers in the United States: Historical and Political Perspectives*. Albuquerque: University of New Mexico Press.

Kossoudji, Sherrie A. 1992. "Playing cat and mouse at the U.S.–Mexican border," *Demography* 29: 159–180.

Kraly, Ellen P., and Robert Warren. 1991. "Long-term immigration to the United States: New approaches to measurement," *International Migration Review* 25: 60–92.

———. 1992. "Estimates of long-term immigration to the United States: Moving U.S. statistics toward United Nations concepts," *Demography* 29: 613–626.

Kuhn, Thomas S. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press.

Levine, Barry B. 1987. *The Caribbean Exodus*. New York: Praeger.

Levine, Daniel B., Kenneth Hill, and Robert Warren (eds.). 1985. *Immigration Statistics: A Story of Neglect*. Washington, D.C.: National Academy Press.

Levy, Mildred B., and Walter J. Wadycki. 1973. "The influence of family and friends on geographic labor mobility: An intercensal comparison," *The Review of Economics and Statistics* 55: 198–203.

Lindstrom, David P., and Douglas S. Massey. 1994. "Selective emigration, cohort quality, and models of immigrant assimilation," *Social Science Research*, forthcoming.

Logan, John R., Richard D. Alba, and Thomas L. McNulty. 1994. "Ethnic economies in metropolitan regions: Miami and beyond," *Social Forces* 72: 691–724.

López, Gustavo. 1986. *La Casa Dividida: Un Estudio de Caso Sobre Migración a Estados Unidos en un Pueblo Michoacano*. Zamora, Michoacán: El Colegio de Michoacán.

———. 1988. "La migración a Estados Unidos en Gómez Farías, Michoacán," in Gustavo López (ed.), *Migración en el Occidente de México*. Zamora, Michoacán: El Colegio de Michoacán, pp. 125–134.

MacDonald, John S., and Leatrice D. MacDonald. 1974. "Chain migration, ethnic neighborhood formation, and social networks," in Charles Tilly (ed.), *An Urban World*. Boston: Little, Brown, pp. 226–236.

Maingot, Anthony P. 1991. "Emigration and development in the English-speaking Caribbean," in Sergio Díaz-Briquets and Sidney Weintraub (eds.), *Determinants of Emigration from Mexico, Central America, and the Caribbean*. Boulder: Westview Press, pp. 99–120.

Maldonado, Rita. 1976. "Why Puerto Ricans migrated to the United States in 1947–1973," *Monthly Labor Review* 99, no. 9: 7–18.

Martin, John B. 1966. *Overtaken by Events: From the Death of Trujillo to the Civil War*. New York: Doubleday.

Martin, Philip L., and J. Edward Taylor. 1991. "Immigration reform and farm labor contracting in California," in Michael Fix (ed.), *The Paper Curtain: Employer Sanctions' Implementation, Impact, and Reform*. Washington, D.C.: The Urban Institute Press, pp. 239–261.

Massey, Douglas S. 1985. "The settlement process among Mexican migrants to the United States: New methods and findings," in Levine, Hill, and Warren, 1985, pp. 255–292.

———. 1986. "The settlement process among Mexican migrants to the United States," *American Sociological Review* 51: 670–685.

———. 1987a. "Do undocumented migrants earn lower wages than legal immigrants? New evidence from Mexico," *International Migration Review* 21: 236–274.

———. 1987b. "Understanding Mexican migration to the United States," *American Journal of Sociology* 92: 1372–1403.
———. 1988. "International migration and economic development in comparative perspective," *Population and Development Review* 14: 383–414.
———. 1990. "Social structure, household strategies, and the cumulative causation of migration," *Population Index* 56: 3–26.
———, Rafael Alarcón, Jorge Durand, and Humberto González. 1987. *Return to Aztlan: The Social Process of International Migration from Western Mexico.* Berkeley and Los Angeles: University of California Press.
———, and Felipe García España. 1987. "The social process of international migration," *Science* 237: 733–738.
———, and Zai Liang. 1989. "The long-term consequences of a temporary worker program: The U.S. bracero experience," *Population Research and Policy Review* 8: 199–226.
———, et al. 1993. "Theories of international migration: A review and appraisal," *Population and Development Review* 19: 431–466.
———, Luin P. Goldring, and Jorge Durand. 1994. "Continuities in transnational migration: An analysis of 19 Mexican communities," *American Journal of Sociology* 96: 1492–1534.
———, and Emilio Parrado. 1994. "Migradollars: The remittances and savings of Mexican migrants to the United States," *Population Research and Policy Review* 13: 3–30.
———, and Audrey Singer. 1994. "New estimates of undocumented Mexican migration and the probability of apprehension," unpublished paper, Population Research Center, University of Chicago.
McArthur, Harold J., Jr. 1979. "Effects of overseas work on return migrants and their home communities: A Philippine case," *Papers in Anthropology* 20: 85–104.
McDonald, Ian M., and Robert M. Solow. 1985. "Wages and employment in a segmented labor market," *Quarterly Journal of Economics* 100: 1115–1141.
Melendez, Edwin. 1994. "Puerto Rican migration and occupational selectivity, 1982–88," *International Migration Review* 28: 49–67.
Mines, Richard. 1981. *Developing a Community Tradition of Migration: A Field Study in Rural Zacatecas, Mexico and California Settlement Areas.* Monographs in U.S.–Mexican Studies No. 3. La Jolla: Program in United States–Mexican Studies, University of California at San Diego.
———. 1984. "Network migration and Mexican rural development: A case study," in Richard C. Jones (ed.), *Patterns of Undocumented Migration: Mexico and the United States.* Totowa: Rowman and Allanheld, pp. 136–155.
———, Beatriz Boccalandro, and Susan Gabbard. 1992. "The Latinization of U.S. farm labor," *Report on the Americas* 24, no. 1: 42–46.
Nelson, Philip. 1959. "Migration, real income, and information," *Journal of Regional Science* 1: 43–74.
Neuman, Kristin E., and Douglas S. Massey. 1994. "Undocumented migration and the quantity and quality of social capital," paper presented at the Annual Meeting of the Population Association of America, 5–7 May, Miami.
Ortiz, Vilma. 1986. "Changes in the characteristics of Puerto Rican migrants from 1955–1980," *International Migration Review* 20: 612–628.
Osterman, Paul. 1975. "An empirical study of labor market segmentation," *Industrial and Labor Relations Review* 28: 508–523.
Palmer, R. W. 1974. "A decade of West Indian migration to the United States, 1962–72: An economic analysis," *Social and Economic Studies* 23: 571–587.
Passel, Jeffrey S. 1985. "Undocumented immigrants: How many?" in *Proceedings of the Social Statistics Section, American Statistical Association 1985.* Washington, D.C.: American Statistical Association, pp. 65–72.
———, and Karen A. Woodrow. 1987. "Change in the undocumented alien population in the United States, 1979–83," *International Migration Review* 21: 1304–1323.

Piore, Michael J. 1977. "Alcune note sul dualismo ne mercato de Lavoro," *Revista di Economia e Politica Industriale* 3: 350–358.

———. 1979. *Birds of Passage: Migrant Labor in Industrial Societies*. New York: Cambridge University Press.

Poitras, Guy. 1980. *International Migration to the United States from Costa Rica and El Salvador*. San Antonio: Border Research Institute, Trinity University.

Portes, Alejandro, and John Walton. 1981. *Labor, Class, and the International System*. New York: Academic Press.

———, and Robert L. Bach. 1985. *Latin Journey: Cuban and Mexican Immigrants in the United States*. Berkeley and Los Angeles: University of California Press.

———, and Robert D. Manning. 1986. "The immigrant enclave: Theory and empirical examples," in Susan Olzak and Joane Nagel (eds.), *Competitive Ethnic Relations*. Orlando: Academic Press, pp. 47–68.

———, and Leif Jensen. 1987. "What's an ethnic enclave? The case for conceptual clarity," *American Sociological Review* 52: 768–771.

———, and Leif Jensen. 1989. "The enclave and the entrants: Patterns of ethnic enterprise in Miami before and after Mariel," *American Sociological Review* 54: 929–949.

———, and Luis E. Guarnizo. 1990. *Capitalistas del Trópico: La Inmigración en los Estados Unidos y el Desarrollo de la Pequeña Empresa en la República Dominicana*. Baltimore: Facultad Latinoamericana de Ciencias Sociales, Programa República Dominicana, Johns Hopkins University.

———, and Rubén G. Rumbaut. 1990. *Immigrant America: A Portrait*. Berkeley and Los Angeles: University of California Press.

———, and Alex Stepick. 1993. *City on the Edge: The Transformation of Miami*. Berkeley and Los Angeles: University of California Press.

Ramos, Fernando. 1992. "Out-migration and return migration of Puerto Ricans," in George J. Borjas and Richard B. Freeman (eds.), *Immigration and the Work Force: Economic Consequences for the United States and Source Areas*. Chicago: University of Chicago Press, pp. 49–66.

Reichert, Joshua S. 1979. *The Migrant Syndrome: An Analysis of U.S. Migration and its Impact on a Rural Mexican Town*. Doctoral dissertation, Department of Anthropology, Princeton University.

———. 1981. "The migrant syndrome: Seasonal U.S. wage labor and rural development in central Mexico," *Human Organization* 40: 56–66.

———. 1982. "Social stratification in a Mexican sending community: The effect of migration to the United States," *Social Problems* 29: 422–433.

Reisler, Mark. 1976. *By the Sweat of Their Brow: Mexican Immigrant Labor in the United States: 1900–1940*. Westport: Greenwood Press.

Ricketts, Erol. 1987. "U.S. investment and immigration from the Caribbean," *Social Problems* 34: 374–387.

Roberts, Kenneth D. 1982. "Agrarian structure and labor mobility in rural Mexico," *Population and Development Review* 8: 299–322.

Rodríguez, Clara. 1988. "Puerto Ricans and the circular migration thesis," *Journal of Hispanic Policy* 3: 5–9.

Root, Brenda D., and Gordon F. DeJong. 1991. "Family migration in a developing country," *Population Studies* 45: 221–234.

Rouse, Roger C. 1989. *Mexican Migration to the United States: Family Relations in the Development of a Transnational Migrant Circuit*. Doctoral dissertation, Department of Anthropology, Stanford University.

———. 1990. "Men in space: Power and the appropriation of urban form among Mexican migrants in the United States," manuscript, Department of Anthropology, University of Michigan.

———. 1991. "Mexican migration and the social space of postmodernism," *Diaspora* 1: 8–23.

———. 1992. "Making sense of settlement: Class transformation, cultural struggle, and transnationalism among Mexican migrants in the United States," *Annals of the New York Academy of Sciences* 645: 25–52.

Rubenstein, Hymie. 1979. "The return ideology in West Indian migration," *Papers in Anthropology* 20: 21–38.

———. 1982. "Return migration to the English-speaking Caribbean: Review and commentary," in William F. Stinner, Klaus de Albuquerque, and Roy S. Bryce-Laporte (eds.), *Return Migration and Remittances: Developing a Caribbean Perspective*. Washington, D.C.: Smithsonian Institution, pp. 3–34.

———. 1983. "Remittances and rural underdevelopment in the English-speaking Caribbean," *Human Organization* 42: 295–306.

———. 1992. "Migration, development, and remittances in rural Mexico," *International Migration* 30: 127–154.

Rumbaut, Rubén G. 1991. "Passages to America: Perspectives on the new immigration," in Alan Wolfe (ed.), *America at Century's End*. Berkeley: University of California Press, pp. 208–244.

———. 1992. "The Americans: Latin American and Caribbean peoples in the United States," in Alfred Stepan (ed.), *Americas: New Interpretive Essays*. New York: Oxford University Press.

Sanders, Jimy, and Victor Nee. 1987. "Limits of ethnic solidarity in the enclave," *American Sociological Review* 52: 745–767.

Santiago, Carlos E. 1991. "Wage policies, employment, and Puerto Rican migration," in Edwin Melendez, Clara Rodriguez, and Janis Barry Figueroa (eds.), *Hispanics in the Labor Force: Issues and Policies*. New York: Plenum, pp. 275–307.

———. 1993. "The migratory impact of minimum wage legislation: Puerto Rico, 1970–1987," *International Migration Review* 27: 772–795

Sassen, Saskia. 1988. *The Mobility of Labor and Capital: A Study in International Investment and Labor Flow*. Cambridge: Cambridge University Press.

———. 1991. *The Global City: New York, London, Tokyo*. Princeton: Princeton University Press.

Simmons, Alan B., and Jean Pierre Guengant. 1992. "Caribbean exodus and the world system," in Mary M. Kritz, Lin Lean Lim, and Hania Zlotnik (eds.), *International Systems: A Global Approach*. Oxford: Clarendon Press, pp. 94–114.

Singh, I., L. Squire, and J. Strauss. 1986. "An overview of agricultural household models—The basic model: Theory, empirical results, and policy conclusions," in I. Singh, L. Squire, and J. Strauss (eds.), *Agricultural Household Models: Extensions, Applications, and Policy*. Baltimore: Johns Hopkins University Press, pp. 17–47.

Sjaastad, Larry A. 1962. "The costs and returns of human migration," *Journal of Political Economy* 70S: 80–93.

Smith, Robert C. 1992. "'Los ausentes siempre presentes': The imagining, making, and politics of a transnational community between New York City and Ticuani, Puebla," paper presented at the Conference of the Latin American Studies Association, Los Angeles, September.

Stark, Oded. 1991. *The Migration of Labor*. Cambridge: Basil Blackwell.

———, and J. Edward Taylor. 1989. "Relative deprivation and international migration," *Demography* 26: 1–14.

———, and J. Edward Taylor. 1991a. "Migration incentives, migration types: The role of relative deprivation," *The Economic Journal* 101: 1163–1178.

———, and J. Edward Taylor. 1991b. "Relative deprivation and migration: Theory, evidence, and policy implications," in Sergio Díaz-Briquets and Sidney Weintraub (eds.), *Determinants of Emigration from Mexico, Central America, and the Caribbean*. Boulder: Westview Press, pp. 121–144.

———, J. Edward Taylor, and Shlomo Yitzhaki. 1986. "Remittances and inequality," *The Economic Journal* 96: 722–740.

———, J. Edward Taylor, and Shlomo Yitzhaki. 1988. "Migration, remittances, and inequality: A sensitivity test using the extended Gini Index," *Journal of Development Economics* 28: 309–322.

Statistics Canada. 1992. *Immigration Canada: Immigration Statistics 1990.* Ottawa: Statistics Canada.

Taylor, J. Edward. 1986. "Differential migration, networks, information and risk," in Oded Stark (ed.), *Research in Human Capital and Development,* Volume 4: *Migration, Human Capital, and Development.* Greenwich: JAI Press, pp. 147–171.

———. 1987. "Undocumented Mexico–U.S. migration and the returns to households in rural Mexico," *American Journal of Agricultural Economics* 69: 616–638.

———. 1992a. "Remittances and inequality reconsidered: Direct, indirect, and intertemporal effects," *Journal of Policy Modeling* 14: 187–208.

———. 1992b. "Earnings and mobility of legal and illegal immigrant workers in agriculture," *American Journal of Agricultural Economics* 74: 889–896.

———, and T. J. Wyatt. 1993. "Migration, assets, and income inequality in a diversified household-farm economy: Evidence from Mexico," paper presented at the Annual Meeting of the American Agricultural Economics Society, Orlando, 3–5 August.

———, and Dawn Thilmany. 1993. "Worker turnover, farm labor contractors, and the California farm labor market," *American Journal of Agricultural Economics* 75: 350–360.

Teitelbaum, Michael S. 1989. "Skeptical noises about the immigration multiplier," *International Migration Review* 23: 893–899.

Thompson, Gary, Ricardo Amón, and Philip L. Martin. 1986. "Agricultural development and emigration: Rhetoric and reality," *International Migration Review* 20: 575–598.

Todaro, Michael P. 1969. "A model of labor migration and urban unemployment in less-developed countries," *The American Economic Review* 59: 138–148.

———. 1976. *Internal Migration in Developing Countries.* Geneva: International Labor Office.

———, and Lydia Maruszko. 1987. "Illegal migration and US immigration reform: A conceptual framework," *Population and Development Review* 13: 101–114.

Tolbert, Charles M. II, Patrick M. Horan, and E. M. Beck. 1980. "The structure of economic segmentation: A dual economy approach," *American Journal of Sociology* 85: 1095–1116.

Trigueros, Paz, and Javier Rodríguez. 1988. "Migración y vida familiar en Michoacán," in Gustavo López (ed.), *Migración en el Occidente de México.* Zamora, Michoacán: El Colegio de Michoacán, pp. 201–221.

United Nations. 1991. *Remesas y Economía Familiar en El Salvador, Guatemala, y Nicaragua.* Mexico: Comisión Económico para América Latina y el Caribe, Naciones Unidas.

Vandemann, A., E. Sadoulet, and A. de Janvry. 1991. "Labor contracting and a theory of contract choice in California agriculture," *American Journal of Agricultural Economics* 73: 681–692.

Vega, William A., Bohdan Kolody, Ramon Valle, and Judy Weir. 1991. "Social networks, social support, and their relationship to depression among immigrant Mexican women," *Human Organization* 50: 154–162.

Walker, Robert, Mark Ellis, and Richard Barff. 1993. "Linked migration systems: Immigration and internal labor flows in the United States," *Economic Geography* 69: 234–248.

———, and Michael Hannan. 1989. "Dynamic settlement processes: The case of U.S. immigration," *Professional Geographer* 41: 172–183.

Warren, Robert, and Ellen P. Kraly. 1985. "The elusive exodus: Emigration from the United States," *Population Trends and Public Policy,* No. 8. Washington, D.C.: Population Reference Bureau.

White, Michael J., and Yoshie Imai. 1992. "The impact of U.S. immigration upon internal migration," paper presented at the Annual Meeting of the American Sociological Association, Miami, 6–9 August.

———, Frank D. Bean, and Thomas Espenshade. 1990. "The U.S. 1986 Immigration Reform and Control Act and undocumented migration to the United States," *Population Research and Policy Review* 9: 93–116.

Wiest, Raymond E. 1973. "Wage-labor migration and the household in a Mexican town," *Journal of Anthropological Research* 29: 180–209.

———. 1979. "Implications of international labor migration for Mexican rural development," in Fernando Camara and Robert Van Kemper (eds.), *Migration Across Frontiers: Mexico and the United States*. Albany: Institute for Mesoamerican Studies, State University of New York at Albany, pp. 85–97.

———. 1984. "External dependency and the perpetuation of temporary migration to the United States," in Richard C. Jones (ed.), *Patterns of Undocumented Migration: Mexico and the United States*. Totowa: Rowman and Allanheld, pp. 110–135.

Wilson, Kenneth, and W. Allen Martin. 1982. "Ethnic enclaves: A comparison of the Cuban and black economies in Miami," *American Journal of Sociology* 88: 135–160.

Wilson, Patricia A. 1992. *Exports and Local Development: Mexico's New Maquiladoras*. Austin: University of Texas Press.

Wong, Morrison G. 1986. "Post-1965 Asian immigrants: Where do they come from, where are they now, and where are they going?" *Annals of the American Academy of Political and Social Science* 487: 150–169.

Wood, Charles H., and Terry L. McCoy. 1985. "Migration, remittances and development: A study of Caribbean cane cutters in Florida," *International Migration Review* 19: 251–277.

Wright, Eric O. 1979. *Class Structure and Income Determination*. New York: Academic Press.

Zabin, Carol, and Sallie Hughes. 1994. "Economic integration and migration: A case study of indigenous Oaxacan farm workers in Baja California and the United States," *International Migration Review*, forthcoming.

Zhou, Min, and John R. Logan. 1989. "Returns on human capital in ethnic enclaves: New York City's Chinatown," *American Sociological Review* 54: 809–820.

Zolberg, Aristide R., Astri Suhrke, and Sergio Aguayo. 1989. *Escape from Violence: Conflict and the Refugee Crisis in the Developing World*. New York: Oxford University Press.

Zucker, Lynne G., and Carolyn Rosenstein. 1981. "Taxonomies of institutional structure: Dual economy reconsidered," *American Sociological Review* 46: 869–883.