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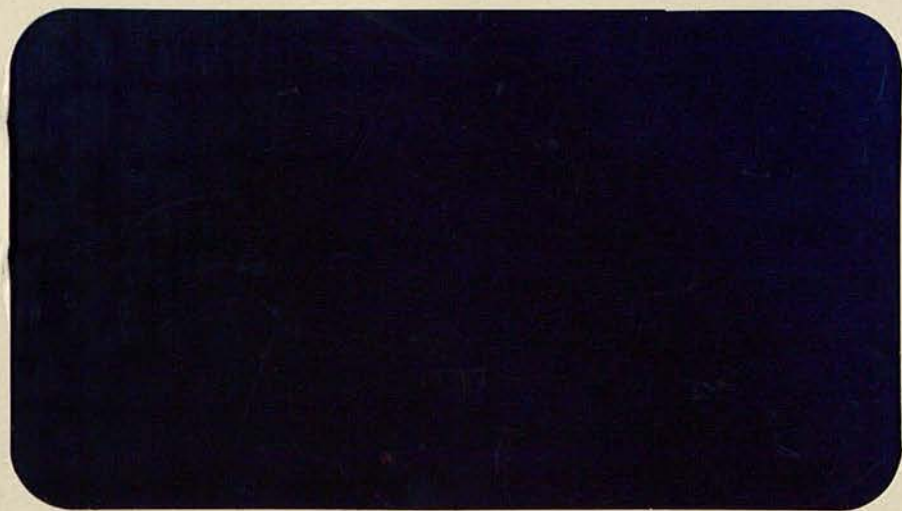
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**U.S. IMMIGRATION POLICY, EARNINGS
AND MOBILITY IN THE FARM LABOR MARKET**

by

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ABSTRACT

This paper presents theoretical and empirical evidence that U.S. immigration policy alters the process by which legal and illegal workers are assigned to specialized versus low-skill jobs, while under certain circumstances creating a wedge between the marginal value product of labor and wages when employers act to maximize expected profits. Econometric findings, using data from a 1983 survey of California farmworkers, suggest that the California farm labor market is segmented along immigration status lines: mobility into relatively high-paying, specialized farm jobs is restricted for illegal immigrant workers relative to legal workers, and there is strong evidence of structural differences between the earnings-determination process for legal and illegal-immigrant farmworkers, as would be expected from the theoretical model.

U.S. IMMIGRATION POLICY, EARNINGS AND MOBILITY IN THE FARM LABOR MARKET

The role and impacts of undocumented foreign workers in U.S. labor markets have been a subject of growing concern to policy makers in the 1980s (see, for example, Economic Report of the President, 1986). Partly in response to these concerns, researchers have given increasing attention to analyzing the effects of immigration policy on welfare (Ethier, 1986; Bond & Chen, 1987; Djajić, 1987) and to estimating the impacts and roles of undocumented workers in host-country labor markets (Chiswick, 1986; Muller and Espenshade, 1985; Bean, Lowell and Taylor, 1988), despite severe data limitations on the characteristics and labor-market experience of illegal immigrant workers. Empirical studies consistently find little or no evidence that, on the whole, immigrant workers (Borjas, 1984), Mexican immigrants (Borjas, 1984; Muller and Espenshade, 1985) or undocumented immigrants (Bean, Lowell and Taylor, 1988) are substitutes for native-born workers in U.S. labor markets.

A limitation of existing studies on substitutability of undocumented and legal workers in the United States is that they do not focus on particular segments of the job-skill ladder; instead they treat all legal and undocumented workers as members of a single labor market in terms of the types of jobs they perform. Although the average earnings of legal workers as a group may not be affected adversely by the presence of illegal immigrants, this finding does not necessarily imply that all legal workers benefit from the presence of undocumented workers or that the impacts of illegal immigrants are the same in all sectors of the economy or at all levels of the job-skill ladder. Recent econometric evidence of labor-market segmentation in the United States (Dickens and Lang, 1985) suggests another possibility: the process by which workers are channelled into different types of jobs, and the process by which

earnings are determined in these jobs, may be different for illegal immigrants than for otherwise similar legal workers.

The present study examines, theoretically and empirically, the earnings and mobility of legal and undocumented-immigrant workers in U.S. farm jobs and the implications for U.S. immigration policy. The empirical analysis is based on a unique 1983 survey of the California farm workforce. Agriculture in the American Southwest depends heavily on undocumented workers for harvesting crops and for other farm labor activities (Mines and Martin, 1986; Taylor and Espenshade, 1987).¹ Agricultural jobs are among the lowest-skill and poorest-paying jobs in the U.S. economy, and farmworkers are among the most disadvantaged members of the U.S. labor force in terms of earnings and stability of employment. Nevertheless, farm jobs are far from homogeneous in terms of skills and earnings; the mobility of farmworkers into relatively specialized machine-operator and supervisory positions may have an important effect on farmworker earnings.

Part I presents a theoretical argument that enforcement of U.S. immigration laws alters the process by which legal and illegal workers are assigned to specialized versus low-skill jobs, and it may create a wedge between the marginal value product of labor and wages when employers act to maximize expected profits. Specifically, the theoretical model predicts that illegal immigrant workers will be assigned to jobs in which their productivity is highest but where their sudden apprehension by immigration authorities results in the smallest productivity loss for legal and illegal labor and other factors. These tend to be the least specialized and most labor-intensive jobs. With regard to earnings formation, when immigration laws are rigorously enforced, a decrease in earnings of illegal versus legal workers may be

¹As of July 1988, California alone had generated more than 400,000 applications for farmworker legalization under the special agricultural worker (SAW) program of the 1986 Immigration Reform and Control Act (IRCA), representing two-thirds of the national total.

required to compensate employers for expected production losses due to border enforcement.

Part II provides empirical evidence that the California farm labor market is segmented along immigration status lines: mobility into relatively high-paying, specialized farm jobs is restricted for illegal immigrant workers relative to legal workers, and there appear to be structural differences between the earnings determination process for legal and illegal-immigrant farmworkers, as one might expect from the theoretical findings presented in Part I. Part III presents a summary of findings and a discussion of some of their implications for U.S. immigration reform. The findings suggest that, to the extent a farmworker's status as an illegal immigrant represents a barrier to mobility in the farm labor market, then removal of this barrier through large-scale farmworker legalization programs may have repercussions in both the farm and nonfarm sectors.

I. IMMIGRATION-LAW ENFORCEMENT, HIRING DECISIONS AND FARMWORKER EARNINGS

The effect of immigration law enforcement on hiring decisions and wages is illustrated most clearly by the case in which employers are subject to explicit penalties for knowingly hiring illegal immigrants. The combination of border enforcement with employer sanctions creates a situation in which neither the cost nor the supply of undocumented workers is known with certainty by farm employers at the time their hiring decisions are made. The availability of illegal-immigrant workers hired by farm employers is contingent upon these workers avoiding apprehension by immigration authorities. Beginning in December 1988, when sanctions are implemented against the hiring of illegal immigrants in U.S. perishable agriculture, the cost of illegal-immigrant labor will include penalties

levied against employers for knowingly hiring illegal immigrant workers. Let p denote the probability that a farm employer will be inspected by Immigration and Naturalization Service (INS) authorities, let s denote the share of illegal workers surviving such an inspection, and let T denote the (explicit) penalty to employers per apprehended worker.² The expected penalty for hiring an illegal immigrant worker is then given by psT , and the expected cost of workers to farm employers is $w_0 + p(1-s)(T - w_0)$, where w_0 is the wage for undocumented workers.³

If prevailing market wages of illegal workers are comparable to those of otherwise similar legal workers, illegal workers will be assigned to jobs in which their marginal product exceeds that of legal workers by an amount at least equal to $p(1-s)(T-w_0)$; otherwise they will not be hired at all. A wage for illegal workers inferior to that of legal workers would be required to induce expected profit-maximizing employers to hire illegal workers in jobs where the difference between illegal and legal workers' productivity is small or negative.

Explicit penalties are not the only way in which immigration policy affects the shadow prices of legal versus illegal labor. On the production side, the possibility that employers will lose part of their illegal workforce to apprehension also affects the shadow price differential between legal and illegal workers. Intuitively, the shadow cost of illegal labor to employers includes expected losses in productivity of illegal and legal workers and of other factors (i.e., capital) in the event apprehensions occur.

²In practice, imposition of fines is predicated upon the Immigration and Naturalization Service (INS) demonstrating that an employer knowingly hired illegal immigrants. The worker survival rate s reflects the difficulty of proving that an employer knowingly hired such a worker as well as the difficulty of apprehending workers in the field.

³This formulation assumes that employers pay wages only to workers who avoid apprehension while having to pay a penalty T for each apprehended worker. In addition to T , there is also an expected shadow cost in terms of productivity lost to apprehensions, as will be discussed below.

Formally, consider an expected profit-maximization problem in the absence of explicit penalties involving a three-factor production function $F(L_0, L_1, K)$, where L_0 and L_1 denote legal and illegal-immigrant labor, respectively, and k denotes capital:

$$(1) \quad \max_{L_0, L_1, k} E\Pi = (1-p)[F(L_0, L_1, k) - w_0L_0 - w_1L_1 - w_KK] \\ + p[F(L_0, sL_1, k) - w_0L_0 - w_1sL_1 - w_KK].$$

The usual assumptions are made regarding the shape of the production function; i.e., production is increasing in factor inputs ($F_i > 0$ for all factors i), but at a decreasing rate ($F_{ij} < 0$). In (1), w_0 , w_1 , and w_K are the market prices of legal labor, illegal-immigrant labor and capital, respectively. To simplify exposition, the output price is normalized to 1. Also for simplicity, the quantity of capital is assumed to be fixed in the short run. It is also assumed that input demands cannot be altered in the period under consideration in response to apprehensions of illegal-immigrant workers by INS authorities, and that wages are paid only to nonapprehended workers.

First-order conditions for expected profit-maximization require that:

$$(2a) \quad F_0 = p(F_0 - F_0^S) + w_0$$

$$(2b) \quad F_1 = p(F_1 - sF_1^S) + w_1[1 - p(1-s)]$$

where F_0 and F_1 denote the marginal productivities of legal and illegal-immigrant labor in the absence of apprehensions and F_0^S and F_1^S denote marginal productivities of labor in the event that apprehensions occur, leaving a share s of the original illegal-immigrant workforce. Conditions (2a) and (2b) state that at the optimal hiring levels, the marginal products of legal and illegal-immigrant workers equal the expected marginal cost to employers of hiring each labor type. These costs

consist of the expected marginal cost of apprehensions in terms of lost productivity for each labor type, plus the expected direct costs of hiring legal and illegal labor, respectively.

In the special case where the two labor types are perfect substitutes, (2a) and (2b) can be combined as (3):

$$(3) \quad pF_L^S(1-s) = w_0 - w_1^*$$

where F_L^S is the marginal product of (both types of) labor given apprehensions and $w_1^* = w_1[1 - p(1-s)]$ is the expected cost of illegal-immigrant labor. In the absence of border-law enforcement, w_1^* is equal to the market wage for illegal-immigrant labor, and legal and illegal workers receive the same wage. The left-hand side of (3) represents the expected cost of apprehensions in terms of lost labor productivity. Equation (3) states that legal and illegal-immigrant labor is hired up to the point where the expected marginal productivity loss due to apprehensions equals the difference in the expected cost between the two labor types. If legal and illegal-immigrant workers are perfect substitutes in production, a low market wage for illegal workers relative to legal workers is required to induce employers to hire illegal-immigrant workers.⁴

If legal and illegal-immigrant workers are not perfect substitutes, the difference between the two groups' wages cannot be determined theoretically. In the simple case where immigration laws are not enforced ($p = 0, s = 1$), the wage differential is equal to the difference in marginal productivities of the two groups:

$$w_0 - w_1 = F_0 - F_1.$$

⁴To see this, note that if $F_L^S > 0$ and $0 < p, s < 1$, $w_0 > w_1^*$ (by equation (3)), and $w_1^* > w_1$ (by the definition of w_1^*)

In the case of enforcement ($0 < p, s < 1$), the difference in wages also depends upon the impact of apprehensions on the marginal productivity of both legal and illegal-immigrant workers:

$$(4) \quad w_0 - w_1 = (F_0 - F_1) + p(F_0^S - F_0) - p[sF_1^S - F_1 + w_1(1 - s)].$$

The first term on the right-hand side of (4) is the difference in marginal productivity between legal and illegal-immigrant workers in the absence of enforcement. The second term represents the expected effect of illegal-worker apprehensions on the productivity of legal workers; its sign depends on the extent to which the two labor groups are complements in production. The third term represents the expected effect of apprehensions on the marginal productivity of illegal-immigrant workers and on the cost of illegal-immigrant labor. Its sign depends in part on the curvature of the marginal product of illegal labor function.

Border Enforcement and Job Assignment

Although the effect of immigration-law enforcement on farmworker wages is ambiguous except in the special case of perfect substitutability, it is nevertheless possible to venture hypotheses regarding the impact of border enforcement on the assignment of workers to specialized versus low-skill farm jobs. One would expect illegal immigrant workers to be assigned to farm jobs in which their productivity is highest but in which their apprehension by immigration authorities is likely to have the smallest adverse effect on the productivity of legal labor, illegal-immigrant labor, and other factors. In practice, these two objectives may conflict: it is conceivable that an illegal-immigrant worker's labor is most productive in capital-intensive (e.g., machine-operator) or human capital-intensive (e.g., supervisory)

jobs; however, the sudden apprehension of workers in relatively specialized jobs may have an adverse impact on the productivity of complementary factors (e.g., capital) employed in these jobs. Furthermore, if a worker in a specialized job complements workers in low-skill, labor-intensive farm jobs (e.g., harvesting, hoeing and planting), then the sudden loss of the former could have a substantial adverse effect on the productivity of the latter. By contrast, the loss of a worker in a labor-intensive job would be less likely to have a large adverse effect on the productivity of a complementary worker in a specialized farm job.

An often-cited advantage of illegal-immigrant labor is its relative abundance for labor-intensive, low-skill jobs, while a comparative advantage of domestic (legal-immigrant and U.S.-born) workers may be in relatively human capital-intensive operations. When estimating the effect of immigration status on the assignment of workers to specialized versus low-skill farm jobs, it is important to control for the effect of human capital variables (education, experience) and other worker characteristics on the job-assignment process. In light of the theoretical discussion above, the degree of complementarity between the two labor types may also affect workers' job assignment. Unless the two worker groups are strong substitutes in production, illegal-immigrant workers are less likely to be observed in positions where their sudden apprehension would have the largest adverse impact on the productivity of illegal-immigrants and other factors. This would be reflected empirically in differences in the effect of labor-force competition and human capital on mobility for the two worker groups.

The degree of complementarity between legal and illegal-immigrant workers in the farm sector is an empirical question. Largely because of this, theoretical analysis provides few conclusive findings concerning the effect of immigration-law enforcement on earnings formation in farm labor markets and on the assignment of

workers to specialized versus low-skill, labor-intensive farm jobs. Thus, empirical analysis is also required to explore these questions.

II. EMPIRICAL MODELING OF FARMWORKERS' EMPLOYMENT AND EARNINGS

The degree of complementarity between legal and illegal-immigrant workers in the farm sector can be explored using a variant of the Generalized Leontief production function (Borjas, 1984; Bean, Lowell and Taylor, 1988). According to this specification, the earnings of worker i belonging to immigration-status group k , e_k^i , are represented as a function of the ratio of workers of other immigration-status groups (j) to workers in group k in the labor market in which person i is observed $(X_j/X_k)^i$; of job type; and of human-capital variables (q^i) assumed to influence earnings. To test the hypothesis that there are structural differences in earnings formation between the two labor groups, dummy variables for legal workers ($d^i = 1$) and illegal-immigrant workers ($d^i = 0$) are used to allow for different parameter estimates for these two worker groups:

$$(5) \quad e_k^i = \beta_{01}d^i + \beta_{02}(1-d^i) + q^id^i\beta_1 + q^i(1-d^i)\beta_2 + (X_j/X_k)^i\beta_3 + u^i.$$

The parameter β_1 represents the returns to human capital for legal workers and β_2 measures the returns to human capital for undocumented workers. The coefficient β_3 measures the degree of substitutability between group j workers and group k workers in the farm production process.⁵

⁵The coefficient on X_j/X_k for group k workers is constrained to equal the coefficient on X_k/X_j for group j workers by symmetry of the production coefficient matrix.

Immigration Status and the Structure of Farm Employment

Estimation of the farm labor assignment process requires estimating a model for the allocation of legal and illegal-immigrant workers between specialized and low-skill farm jobs. Like the earnings equation, the job-assignment model must have sufficient flexibility to allow for structural differences between the effect of human capital variables on job placement for legal and undocumented workers.

Let z^* denote some threshold of worker attributes (experience, education, etc.) required by farm employers for entry into specialized (machine operator or foreman) farm jobs. On the basis of the preceding theoretical discussion, we would expect this threshold to be higher for undocumented workers than for legal workers, reflecting a demand by employers for higher productivity from undocumented workers as compensation for the expected cost associated with apprehensions of illegal workers in these positions. Let ϕ denote a vector of human capital variables and let x denote a vector of other (e.g., labor market and job-specific) variables that influence employers' job assignment decisions. The employer-perceived attribute function for farmworker i is represented by

$$(6) \quad z^i = \alpha_{01}d^i + \alpha_{02}(1 - d^i) + \alpha_1d^ix^i + \alpha_2(1-d^i)x^i + \alpha_3d^i\phi^i + \alpha_4(1-d^i)\phi^i + \varepsilon^i$$

The coefficient α_3 represents the weight that employers attach to the human capital of legal workers when assigning them to farm jobs, while α_4 is the weight attached to the human capital of undocumented foreign workers. Worker i is found in a semi-skill (foreman or machine-operator) job ($SKLJOB^i = 1$) if $z^i > z^*$ and in a low-skill job ($SKLJOB^i = 0$) otherwise; that is

$$(7) \quad SKLJOB^i = \begin{cases} 1 & \text{if } \alpha_{01}d^i + \alpha_{02}(1-d^i) + \alpha_1d^ix^i + \alpha_2(1-d^i)x^i + \alpha_3d^i\phi^i \\ & + \alpha_4(1-d^i)\phi^i - z^* > -\varepsilon^i \\ 0 & \text{otherwise} \end{cases}$$

This allocation rule can be estimated as a probit under the assumption that the error terms are distributed as independent, standard normal variates.

III. EMPIRICAL FINDINGS

Data

The findings reported below are based on a unique set of data on farmworkers surveyed throughout California by the University of California (UC) and the California Employment Development Department (EDD) in August 1983. The sample includes 738 male farmworkers in 37 counties; workers in all crops and production-related activities were interviewed in each survey area. The sample was designed to represent as closely as possible the statewide distribution of farmworkers.⁶

The data provide detailed information on farmworker human capital and other socio-demographic characteristics, including legal status; on the type of farm work in which farmworkers were employed at the time of the interview; and on farmworker earnings. Definitions of variables included in the analysis appear in Table 1.

Interviewers on the UC-EDD survey team attempted to determine farmworkers' legal status, whenever possible, without resorting to direct questioning. However, any survey that collects information on workers' legal status is likely to understate absolute numbers of illegal-immigrant workers. Many documented workers are reluctant to reveal their true legal status. Others may have purchased documents that are not valid (for example, falsified green cards). One implication of underreporting of undocumented workers for the empirical analysis that follows is a tendency for legal and undocumented workers to appear to be more similar in

⁶A detailed description of the survey design and survey instruments is provided in Mines and Martin (1986).

Table 1. Definitions of Variables

Endogenous Variables:

$$\text{SKLJOB}^i = \begin{cases} 1 & \text{if person } j \text{ is observed in a semi-skill (machine operator or foreman) job} \\ 0 & \text{if person } j \text{ is observed in a low-skill job} \end{cases}$$

Exogenous Variables:

XUSCIT =	U.S. citizenship dummy (1 if U.S. citizen, 0 otherwise)
LFRAT =	Labor-factor ratio term from the Generalized Leontief production function (LFRAT = $(X_2/X_1)^{1/2}$ for legal workers (group 1) and $(X_2/X_1)^{1/2}$ for undocumented immigrants (group 2))
ED1 =	Schooling dummy (1 if a worker has completed 6-9 years of formal education, 0 otherwise)
ED2 =	Schooling dummy (1 if a worker has completed at least 9 years of formal education, 0 otherwise)
FARMEX =	U.S. farm experience (number of years in which a person has worked at least one week in U.S. agriculture, x 10)
FARMEX2 =	FARMEX-squared
NETWORK =	Migration network dummy for foreign-born workers (1 if the worker has a home-town contact in U.S. agriculture, 0 otherwise)

the data than they really are. Thus, in tests for structural differences in earnings and employment between legal and undocumented workers, underreporting of illegal immigrants tends to lessen the probability of rejecting the null hypothesis that the two groups are not significantly different. That is, it makes the requirements for rejecting null hypotheses more stringent than they would otherwise be. In the

present sample, 19 percent of all workers interviewed were recorded as being undocumented immigrants.

Immigration Status, Substitutability, and Farmworker Earnings

A potential complication that arises when estimating earnings equation (5) is that the regional labor-force ratio terms X_j/X_k cannot be assumed to be exogenous. If workers perceive themselves to be in competition with other worker groups, they may have an incentive to move to regions in which their perceived competitors are less pervasive. Thus, there is potential simultaneity between earnings and the labor-force ratio for the region in which a worker is observed.

Two-stage least squares was employed to obtain consistent and asymptotically efficient estimates of weekly earnings (Equation 5) for undocumented and legal farmworkers while correcting for endogeneity of regional labor-force ratios in an approach similar to that proposed by Borjas (1984). The instrument for the regional labor-force variable was obtained using human capital and other individual-characteristic variables in equation (5) together with a list of variables frequently used to model differences in economic opportunities across regions, but tailored to the study of farm labor markets. These include the size of the regional labor force, its structure (distribution of employment across agriculture, manufacturing, and other jobs), regional per-capita incomes, and average housing costs.

Empirical Findings on Farmworker Earnings

The results of the two-stage least-squares estimate of farmworker earnings are presented in Table 2. The coefficient on the labor-force ratio term (LFRAT) does not support the hypothesis that illegal-immigrant workers are substitutes for legal workers in the California farm labor market. The table also shows systematic

differences between legal and undocumented workers in terms of the returns to human capital. Only 27 percent of all farmworkers in the sample had completed at least six years of formal schooling. For legal workers, completion of schooling is associated with significant positive increases in weekly earnings. These increases are 16 percent (significant at the 0.01 level) for primary schooling and 12.4 percent (significant at the 0.05 level) for secondary schooling. There are also significant positive returns to farm work experience for legal workers (2.3 percent per year, decreasing only slightly over the relevant range of experience). By contrast, there are no significant returns to schooling for illegal-immigrant farmworkers, and we cannot reject the null hypothesis that the relationship between earnings and farm work experience for illegal workers is flat. A likelihood-ratio test rejects the hypothesis that the returns to human capital are the same for the two groups at below the 0.01 level of significance.

Immigrant Status and the Structure of Farm Employment

Differential returns to human capital for legal and illegal-immigrant farmworkers do not alone demonstrate that the farm labor market is segmented along immigration status lines. Labor market segmentation also implies differential treatment of the two labor groups in the assignment of workers to specialized farm jobs.

Differences in the process by which legal and undocumented workers are assigned to low-skill versus specialized jobs in California farm labor markets are examined using a multivariate probit corresponding to rule (7). The results of the probit are summarized in Table 3. They show that there are significant positive returns to human capital for legal farmworkers in terms of job placement. Legal farmworkers with at least six years of formal schooling are more likely to be placed in specialized jobs than are legal workers with less education. There are also

Table 2.
Two-stage Least Squares Estimates of Farmworker Earnings

Dependent Variable: Log of Weekly Earnings:		
	Legal Farmworkers	Undocumented Immigrants
CONSTANT	4.981** (9.220)	5.016** (2.613)
LFRAT	0.051 (0.052)	0.051 (0.052)
XUSCIT	0.059 (1.033)	
ED1	0.160** (3.236)	0.152* (1.053)
ED2	0.124** (1.977)	-0.066 (-0.309)
FARMEX	0.226** (3.422)	-0.035 (-0.210)
FARMEX2	-0.044** (-3.036)	0.028 (0.722)

**(*) Significantly different from zero at the .05 (.10) level.

significant returns to secondary schooling and to farm experience in terms of job placement for legal farmworkers. These findings indicate that farm employers attach a significant positive weight to the human capital of legal workers when assigning them to specialized versus low-skill farm jobs.

By contrast, there is no evidence of returns to human capital in job placement for undocumented farmworkers. Neither completion of primary schooling nor

completion of secondary schooling increased illegal-immigrant workers' chances of being placed in machine operator or foreman jobs. Furthermore, there is no significant improvement in illegal workers' job prospects as they gain experience working on U.S. farms. These findings suggest that only by acquiring secure legal

Table 3
Probit Estimates of Farmworker Job Mobility

Dependent Variable: SKLJOB		
	Legal Farmworkers	Undocumented Immigrants
CONSTANT	-1.421** (-4.094)	-0.677 (-0.710)
LFRAT	-0.116 (-0.401)	-1.093 (-1.339)
XUSCIT	0.222 (1.309)	
ED1	0.361** (2.426)	0.084 (-0.202)
ED2	0.547** (2.942)	-3.001 (-0.152)
FARMEX	0.518** (2.659)	1.074 (0.915)
FARMEX2	-0.090** (-2.090)	-0.054 (-0.923)
NETWORK	-0.151 (-1.067)	-0.239 (-0.636)

**(*) Significantly different from zero at the .05 (.10) level.

status in the United States can farmworkers reap a positive return to their schooling and U.S. farm experience in job placement. It appears that both work experience and schooling are discounted heavily in the job allocation process for illegal-immigrant farmworkers. A likelihood-ratio test rejects the null hypothesis that the mobility returns to human capital are the same for the two groups at below the 0.01 significance level.

Home-town contacts in the United States are a major mechanism by which low-skill foreign workers are channeled into seasonal U.S. farm jobs (Taylor, 1987). The insignificant coefficient on this variable (NETWORK) in the probit suggests that migration networks into rural U.S. labor markets may be less successful at placing migrants into relatively high-skill farm jobs once they are employed in farm work.

IV. SUMMARY AND CONCLUSIONS

The empirical findings presented in Part III provide evidence that undocumented workers are not substitutes for legal workers in farm jobs. Consistent with this finding and the theoretical discussion in Part II, human capital (schooling and farm work experience) has a strong positive effect on the mobility of legal workers into specialized farm jobs, but there is evidence that the human capital of illegal-immigrant farmworkers is significantly discounted in the job-placement process. It appears that legal status restricts the mobility of undocumented workers into specialized jobs. One reason for employers' reluctance to hire undocumented workers for key, specialized jobs like machine-operation and foreman positions, is that apprehension of these workers by immigration authorities can have a relatively large adverse effect on production, and on the productivity of other workers.

The structure of the farm labor market might be viewed as resembling a pyramid, with a large base tier of low-skill, labor-intensive jobs tapering off rather quickly to an upper tier of more specialized, machine-operator and supervisory jobs. Although legal immigrant workers are found at all levels of the farm job-skill pyramid, the mobility of legal workers out of relatively poorly paying, low-skill farm jobs increases as these workers acquire skills through formal schooling and farm work experience. Undocumented immigrants primarily staff the bottom of the farm job-skill pyramid, and their illegal status appears to limit their mobility into specialized farm jobs.

The Special Agricultural Worker (SAW) program established by the 1986 Immigration Reform and Control Act will result in the legalization of large numbers of farmworkers. The findings presented here suggest that large-scale legalization may weaken barriers to mobility in farm labor markets, creating a vacuum at the bottom of the job pyramid. Movement of SAWs into specialized farm jobs will be limited by the availability of such jobs. This, together with higher earnings and employment stability in other sectors, is likely to create incentives for many legalized farmworkers to leave agriculture.⁷

If farmworker legalization increases the movement of workers out of low-skill farm jobs, farm employers may face difficult choices. They may be forced to take steps to increase the attractiveness of low-skill farm jobs to legal workers, though some combination of increases in wages and/or stability of employment, employee benefits, and improved working conditions. The tremendous seasonality inherent in most crops and regions limits the extent to which agriculture can provide workers with steady incomes, however. Alternatively, farm employers may reduce

⁷As of August 29, 1988, about 799,000 workers had applied for legalization under the SAW program. California's share of the total, 433,000, represents 47.8 percent of the total number of persons in the state who worked at some time in a farm job in 1985, based on California unemployment insurance records (Martin, Taylor and Hardiman, 1988)

their demand for low-skill labor. In the short run, this may be accomplished by cutting back on the least-essential preharvest activities or on the number of harvests of a given crop per field or orchard. In the medium-to-long run, employers may be able to reduce their demand for low-skill labor by adopting labor-saving technology or by switching out of labor-intensive crops. Finally, farm employers may be able to increase the supply of workers willing to work in low-skill farm jobs without making significant changes in employee compensation, labor management, technology or crop choice by "importing" additional labor from abroad. Beginning in 1989, farm employers will be able to import workers under the Replenishment Agricultural Worker (RAW) program, provided that the Secretaries of labor and agriculture determine that the movement of legalized SAWs out of low-skill farm jobs has created serious labor shortages for perishable crops.⁸

A replenishment agricultural worker program is likely to place agriculture on a labor treadmill: RAWs are required to work 90 days in agriculture in each of two years, but otherwise are free to seek jobs outside of agriculture. As replenishment workers are drawn out of agriculture into sectors with higher earnings and employment stability, new labor shortages will appear at the bottom of the farm job pyramid, and new replenishment workers will be needed.

It appears that labor shortages are not likely to occur in specialized farm jobs. Ironically, to the extent farmworker legalization increases the mobility of labor out of low-skill farm jobs, it is likely to increase competition among workers for relatively high-paying, specialized jobs, which currently are filled primarily by legal workers.

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⁸At present, the most promising avenue for farm employers to legally import temporary foreign workers is the H-2A program. Few western growers make use of this program, however.

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