

Featured Article

Immigration Reform: What Does It Mean for Agriculture and Rural America?

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Abstract *Over half of the hired workers employed on U.S. crop farms have been unauthorized to work since the mid-1990s, thereby increasing risk for employers if increased immigration law enforcement reduces the availability and raises the cost of farm labor. Immigration reform that legalizes farm workers could speed exits from the farm workforce, thus putting upward pressure on farm wages. Better enforcement of existing immigration laws would reduce the supply of farm workers, also putting upward pressure on wages. Producer response to higher wages depends, in part, on the availability of guest workers and alternatives to hand labor such as labor-saving machinery.*

Key words: Immigration reform, U.S. agriculture.

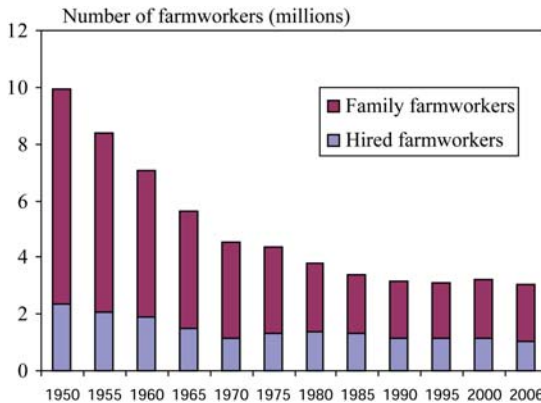
JEL codes: J61, J43, Q16.

Introduction

Over half of the hired workers employed in U.S. crop agriculture are not authorized to work in the United States, thus increasing the risk that there could be a spike in farm labor costs in the event of immigration enforcement or immigration reforms that legalize unauthorized foreigners and make them more mobile in the U.S. labor force. Farm-related industries such as meatpacking could face similar labor cost increases with either enforcement or legalization.

This article reviews patterns of farm worker employment, the characteristics of hired farm workers, and the features of the farm labor market that have allowed farmers to have predictable labor costs despite little investment in recruitment or training. We review patterns of unauthorized migration and the impacts of enforcement in meatpacking before turning to the major immigration reform proposals pending in Congress. The reform proposals range from stepping up enforcement in an effort to encourage unauthorized foreigners to leave the United States, to legalizing most of those already in the country.

¹The views expressed herein are those of the authors, who do not necessarily reflect official USDA policy.

Figure 1 Farmers, family members, and hired workers employed on farms, 1950–2006

Source: Kandel.

The final section examines how governmental policies can shape labor-intensive agriculture's responses to higher wages. If governmental policies make it easier for farmers to hire foreign workers, there will be less upward pressure on farm wages. If there are labor-saving alternatives to hand labor, farmers may mechanize as wages increase. There is a long history of governmental research and development in labor-saving machinery.

Farm Worker Employment

There are two major types of labor employed on agricultural crop farms: (1) farmers and family members whose earnings from farm work reflect the difference between farm revenue and expenses; and (2) hired workers who are paid on an hourly, piece rate or other basis. Both types of farm labor have declined over the past half century due to labor-saving changes in farm production, but the decline in family labor has been most pronounced (figure 1). In 1950, there were an average of over three farmers and family members for each hired worker; today, there are two farmers and family members for each hired worker (Kandel 2008).

Most U.S. farms do not employ any labor—only 22% of the 2.2 million farms enumerated in the 2007 U.S. Census of Agriculture (COA) reported expenditures for hired workers (USDA 2009).² Farm labor expenditures have two components—expenditures on workers hired directly by farmers (\$21.9 billion in 2007) and expenditures for contract labor, that is, workers brought to farms by non-farm entities (\$4.5 billion in 2007). Increased concentration of production usually translates into fewer and larger employers of hired farm workers. The 2007 COA reported that 43,100 U.S. farm employers hired 10 or more workers. These employers comprised less than 10% of the 482,186 U.S. farm employers, but accounted for 58% of the total 2.6 million workers hired. In California, the 7,365 largest farm employers comprised a quarter of the state's farm employers, but accounted for 85% of the total 448,200 workers hired.

²The COA defines farms as places that normally sell at least \$1,000 worth of farm commodities per year.

The employment of hired workers mirrors the production of labor-intensive commodities—both are concentrated by commodity, geography, and size of farm. Farms producing fruit and nuts, vegetables and melons, and horticultural specialties such as greenhouse and nursery crops (FVH crops) accounted for \$13.6 billion, or over half of the \$26.4 billion in U.S. farm labor expenditures in 2007 (table 1). Much of FVH production is concentrated in states such as California and Florida.

The COA does not provide information on farm size and employment by commodity, but large farms dominate production in FVH agriculture and probably dominate employment as well. For example, the 2007 COA reported that 4,700 fruit, berry and nut farms, each with over \$1 million in sales, comprised 4% of this type of farm but accounted for 67% of the sales. Vegetable and melon sales were even more concentrated among large farms; the 4,900 farms with sales of over \$1 million in 2007 made up just 7% of this type of farm, but accounted for 84% of sales.

Even within the FVH sector, farm labor usage and employment patterns vary. Raisin grape and lettuce operations in California provide examples of two different patterns of labor demand. Harvesting raisin grapes has traditionally been the single most labor-intensive seasonal activity in North America, with at least 10 times more workers needed (over 40,000) for the August-September harvest than are employed during other months of the year.³ Raisin grape producers traditionally handle pre-harvest tasks themselves or with a few year-round employees. However, every August, when grapes reach maturity most growers turn to contractors to obtain harvest workers.

There are approximately 4,500 raisin grape growers around Fresno, California, with an average of 50 acres each, and the scramble for workers for the short harvest season is generally accompanied by complaints of labor shortages (Martin 2009).⁴ Growers want workers to be available when grapes are ready to harvest, but do not pay workers while they wait for the harvest to begin, thus generating worries that workers may not show up when needed or drift off to other jobs. The harvesting task is to cut bunches of green grapes, drop them into plastic tubs or pans, and dump the 20-pound tubs onto paper trays lying between the rows to dry into raisins. Most workers can fill 30 to 40 raisin-grape trays an hour, each with 25 pounds of green grapes, thereby earning \$8-10 per hour, or up to \$100 for a 10-hour day (Mason, Striegler, and Berg 1997).

The workers available to harvest raisins have few other U.S. job options. Many of the workers are originally from Mexico and have settled in farm worker cities such as Parlier, California, a city of 12,000 in the heart of the leading U.S. farm county, Fresno. In the past, many workers came to the United States and returned to Mexico after the harvest. However, the displacement of labor from agriculture in Mexico, and stepped-up U.S. border enforcement, which has made crossing the border more risky, have encouraged unauthorized laborers who succeed in entering the United States to stay whether they have year-round jobs or not. Parlier's per capita income was \$7,100 in 1999, one-third of the U.S. average and less

³Because of the perennial nature of many fruit and nut crops, 76% of direct hires for these commodities are for less than 150 days (table 1).

⁴In 2005, raisin growers were reportedly "short" 20% of the workers needed for the harvest (Pollock 2005).

Table 1 Labor Expenses by Type of Farm, 2007

	Farms with direct hire labor expenses						Farms with contract labor expenses				Total farms with labor expenses	
	Number of farms	Labor expenses	Share of expenses	Farms with \$250,000 or more in expenses	Workers hired <150 days		Number of farms	Labor expenses	Share of expenses	Farms with \$50,000 or more in expenses	Total expenses	Share of expenses
				Percent	Number	Percent				Percent		
All farms with expenses	482,186	\$1,877,661	100	3	2,636,509	65	182,701	4,514,166	100	6	\$1,263,917	100
Vegetables and melons	13,642	2,201,929	10	13	255,940	67	5,265	883,842	20	27	3,085,771	12
Fruit and tree nut	36,293	3,514,033	16	7	613,889	76	30,075	1,977,432	44	16	5,491,465	21
Greenhouse, nursery, and floriculture	23,615	4,698,926	21	13	351,064	48	7,638	306,091	7	11	5,005,017	19
FVH		10,414,888	48	10	1,220,893	66		3,167,365	70	16	13,582,253	51

FVH is the sum of fruit and nuts, vegetables and melons, and horticultural specialties

Source: 2007 Census of Agriculture

than the \$8,100 per capita gross national income of Mexico at purchasing power parity. Because most signs in the town are written in Spanish, it is sometimes said that, except for the blue mailboxes, Parlier could be in rural Mexico (Martin 2009).

Lettuce growers plant and harvest lettuce, an annual crop, continuously in the Salinas, California, area during its long season from April through October, before shifting to the Yuma, Arizona, area for most of the rest of the year. Many lettuce operations are quite large: lettuce farms with 100 acres or more account for only 8% of lettuce farms, but 97% of total lettuce farm acreage (COA). Vegetable growers who harvest their own commodities increasingly hire workers almost year-round, and many offer their employees fringe benefits such as health insurance and pensions (Martin and Mason 2004). Other large farms hire a core of year-round workers directly and turn to custom harvesters for harvesting crews, so the workers in a particular field may not be employees of the farmer who owns or leases the land.

There are many variations, but the trend is to have core and peripheral workforces on large vegetable farms, so that year-round workers are supplemented by crews of seasonal workers; many workers are brought to farms by non-farm entities. This non-farm employer, often a labor contractor, is responsible for hiring, screening and paying workers. Many farm labor contractors are not well capitalized, making it difficult for them to satisfy immigration and labor laws (Taylor and Thilmany 1993).

Farm Workers

Relatively low wages, hard physical labor, and seasonal work reduce the appeal of farm work to most U.S. citizens. Those attracted to the farm workforce are generally workers whose alternative U.S. job options are limited by a lack of English, education, or other factors. The National Agricultural Worker Surveys (NAWS) interviews workers employed on crop farms; between 2005 and 2007, NAWS data found that 72% of these workers were born in Mexico, 52% were unauthorized, and 15% were in their first year of U.S. farm work (Carroll, Saltz, and Gabbard 2009). Only 33% of workers were migrants—defined as workers who moved at least 75 miles to do farm work. Almost half of these migrant workers had arrived in the United States from another country during the previous year.

The NAWS paints a picture of a Spanish-speaking farm workforce with little education employed approximately two-thirds of the year on U.S. farms. Hired workers earned an average of \$8 an hour in 2006, half the \$16 average hourly earnings of U.S. production workers (Carroll and Saltz 2008; U.S. Bureau of Labor Statistics). Earning half as much for two-thirds as many weeks of work means that annual farm worker earnings averaged only a third of the \$34,000 of non-farm production workers. Most crop workers rented housing away from the farm where they worked and reported receiving no employment-related benefits from farm employers such as health insurance or pensions.

According to NAWS and unemployment insurance data, most hired workers stay in the seasonal farm workforce less than a decade (Khan, Martin, and Hardiman 2004). However, there are no longitudinal data to track farm workers over time, or studies that prioritize the factors that

could induce seasonal farm workers to remain in the farm workforce longer.⁵ Moreover, farm workers' children educated in the United States rarely follow their parents in to the fields, helping to explain the keen interest of farm employers in immigration policies that open border gates for additional workers.

Since most hired farm workers are immigrants who move out of the seasonal farm labor market as soon as possible, the supply of U.S. farm workers depends on a constant influx of new labor attracted to the United States by wages significantly above those in the workers' countries of origin, primarily Mexico. Immigration policy determines whether that labor force will be legal or illegal.

Relying on newcomers to the United States to fill seasonal farm jobs is not a new phenomenon. In the 19th century, commercial farms in the western United States depended on newcomers who had few alternatives to filling seasonal farm jobs; the Chinese were followed by Japanese and Filipinos, then Mexicans in the 1920s, Dust Bowl refugees in the 1930s, Mexicans again under the Bracero Program between 1942–1964, and unauthorized foreigners since then (Martin 2003).

Farm Labor Market Operation

Work, the exchange of effort for reward, is facilitated by three key labor market functions: recruitment, remuneration, and retention. The combination of seasonal jobs and immigrant workers means that these key functions differ between farm and non-farm labor markets.

Recruitment for non-farm jobs normally involves advertising to let potential workers know about available jobs, screening and testing applicants, and often giving newly-hired workers a probationary status during a training period. Recruitment in the seasonal farm labor market is different. Here, many workers learn of jobs via networks of friends and relatives who advise them that labor contractors or crew leaders are seeking workers. Since employer ads, job fairs, written applications, interviews, and tests are rare in the farm labor market, informal network hiring may mean that workers in a remote Mexican village learn of seasonal job openings on U.S. farms before unemployed workers living nearby do.

Remuneration or motivation to work is encouraged by the wage or reward system. Most farm and non-farm jobs pay hourly wages, and managers monitor the speed and the quality of the work performed. Hourly wages are usually paid when quality is important and managers can set or monitor the pace of work. For example, jobs hoeing weeds are paid hourly wages because the pace of work can be monitored by a supervisor who works alongside the crew.

When it is harder to monitor the speed of work and quality is less important, as when workers pick apples or oranges and are not readily visible to supervisors, piece-rate wages are often used to motivate workers. Piece-rate wages shift the monitoring task from speed to the quality of work, using periodic inspections of harvested fruit containers to

⁵Hashida and Perloff (1996), for example, use NAWS data to show that seasonal workers who are often unemployed accept lower wages because they cannot afford a longer search for a job offering higher wages.

identify excess twigs or damage to fruit, which can result in lower wages for careless workers. Piece-rate wages can keep grower costs constant regardless of variation in worker productivity. For example, the cost of picking ten 1,000 pound bins of apples at \$15 a bin is \$150 whether one fast worker or three slower workers perform the work, but average worker earnings are different. Approximately one-quarter of all jobs on fruit and vegetable farms, and a higher share of harvesting jobs, offer piece rates (NAWS).

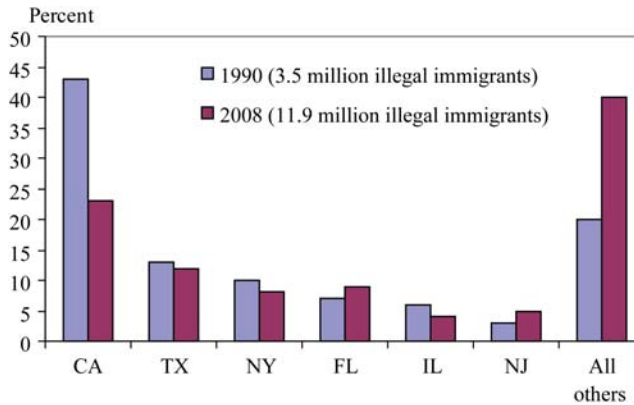
Under the piece-rate pay system, there is an iron triangle between the government-set minimum hourly wage, the employer-set piece rate per unit of work, and the employer's productivity standard. A worker's earnings are the higher of the minimum hourly wage or piece-rate earnings. However, employers normally terminate workers who cannot earn at least the minimum hourly wage at the employer-set piece rate, thereby establishing a minimum productivity standard. For example, if the piece rate for picking apples is \$15 a bin and the minimum wage is \$7.50 an hour, the minimum productivity standard is 0.5 bins an hour or 4 bins in an 8-hour day. Workers who cannot pick an average of four bins a day are normally fired.

The iron triangle explains who retains employment, but not whether there are sufficient workers who can achieve employer-set productivity standards. There are two extremes along the labor availability spectrum, and they are somewhat analogous to the challenge of obtaining sufficient water to irrigate crops. One extreme focuses on individual employers who identify and encourage only the best seasonal workers to return, which could be analogous to investments in drip irrigation systems that save water at the cost of up-front investments in pipes. The other extreme is for employers to work collectively to ensure a sufficient number of seasonal workers to fill all jobs, which could be analogous to obtaining sufficient water to permit flood irrigation. Most farm employers have adopted the flood approach to managing farm labor. They seek to ensure that U.S. border gates are opened or left ajar so that a sufficient number of seasonal workers are available to fill all farm jobs.

Unauthorized Migration and Enforcement

The United States had almost 40 million immigrants or foreign-born residents in 2009 (Passel and Cohn 2009), of which there are three major subgroups. Approximately 14 million are naturalized U.S. citizens. Another 14 million are legal immigrants who have not yet become naturalized U.S. citizens, or are temporary visitors such as foreign students and guest workers, many of whom stay in the United States several years and some of whom become immigrants. Finally, there are 12 million unauthorized foreigners, including 7 million Mexicans.

Between 2003 and 2007, when the U.S. unemployment rate was mostly below 5%, the number of unauthorized foreigners in the United States increased by approximately 500,000 a year, including 300,000 Mexicans a year (Passel and Cohn 2009). Mexican and other unauthorized foreigners spread from California and other traditional migrant destinations throughout the United States. In 1990, California had 42% of the estimated 3.5 million unauthorized foreigners in the country, and the six states with the most unauthorized foreigners combined had 80% of the total (figure 2).

Figure 2 Share of illegal immigrants, selected states, 1990 and 2008

Source: Passel and Cohn.

By 2008, California's share had fallen to 22%, and the same six states had only 60% of the total.

Many of the new growth states for unauthorized foreigners are in the Midwest and Southeast. Unauthorized workers, though relatively few legal immigrants, were attracted to these states by jobs in farming, meat-packing, and construction, and relatively low living costs. By 2008, over half of the foreign-born residents in states such as Colorado, Indiana, and North Carolina were unauthorized.

There are approximately eight million unauthorized foreigners in the U.S. labor force, that is, 5% of U.S. workers (Passel and Cohn 2009). Most unauthorized foreigners are employed in services ranging from food preparation to janitorial services, but these occupations have so many employees that unauthorized foreigners number less than 15% of all workers in these occupations. Unauthorized foreigners loom larger in two farm-related occupations, farm worker and meatpacker, where approximately one-half and one-quarter of production workers, respectively, are believed to be unauthorized (NAWS; Passel and Cohn 2009).

Economics of Immigration

Standard analysis of the economic impacts of immigration assumes that the entry of foreign workers shifts the aggregate labor supply curve to the right along a fixed labor demand curve, thereby increasing employment and lowering wages (Borjas 1994). It is also assumed that the major economic beneficiaries of immigration are the immigrants themselves, who earn higher wages in the destination area, and employers who pay lower wages; the major losers are workers who were employed before the arrival of immigrants lowered wages.

In fact, immigration expands economic output. In 1996, a National Research Council study estimated the size of expansion as up to one-tenth of 1% of U.S. GDP, which was \$8 trillion at the time (Smith and Edmonston 1997). At the time, immigrants comprised 11% of U.S. workers, and their presence depressed U.S. worker wages by an estimated 3%, yielding a net economic benefit due to immigration of up to \$8

billion. The underlying model assumed constant returns to scale, meaning that immigration did not change long-run returns to capital and labor.⁶ For this reason, many economists assert that the major economic issues associated with immigration are distributional, that is, a higher share of immigrants in the labor force, and more wage depression, increases the net benefit of immigration to owners of capital at the expense of workers.

Some economists question whether adding immigrants to the labor force reduces the wages of U.S. workers. Comparisons of wages and unemployment rates in cities with more and fewer immigrants did not find the lower wages and higher unemployment rates in cities with more immigrants that were predicted by economic theory (Borjas 2003). Indeed, Card found that despite the Mariel boat lift, which increased Miami's labor force by 8% in 1980, the unemployment rate of African Americans in Miami in 1981 was lower than in cities such as Atlanta, which did not receive Cuban immigrants (Card 1990).⁷

One explanation for the failure to find the expected adverse wage and unemployment effects of adding immigrant workers is internal migration—U.S. workers who compete with immigrants may move away from cities with more immigrants, or not move to such cities, so that internal migration can make spatial correlations across cities with more and fewer immigrants appear spurious.⁸ For this reason, recent studies of the economic impacts of immigrants use national models that group immigrant and U.S. workers by their level of education and age, a proxy for work experience, to examine the effects of immigrants on U.S. workers. Borjas (2003) grouped U.S. and immigrant workers into four educational and eight work-experience groups: less than high school; high school graduates; some college and college graduates; and work experience measured in five-year increments. Borjas estimated a labor demand elasticity of -0.3 , suggesting that a 10% increase in the supply of labor via immigration reduces wages by approximately 3%. The estimated decrease in wages was larger for low-skilled and younger U.S. workers.

Immigrants do more than add to the labor force; their presence may encourage investment and job creation, thereby reducing any wage-depressing effects. Borjas assumed that immigrants and U.S. workers are substitutes within each age-experience cell, while Peri (2010) assumed that the immigrant and U.S.-born workers within each cell are complements, that is, 25–30 year-old immigrants with less than a high-school education fill different jobs than similar U.S.-born workers. Peri also assumed that there could be an investment response to the arrival of immigrants, which increases the demand for labor, and found that immigrants increase the wages for similar U.S. workers within most age and education cells.

⁶In a simple two-factor production function with homogeneous labor and constant returns to scale, adding immigrants in the short run reduces wages (assuming full employment), but there is no change in the long-run return to labor and capital. If labor is heterogeneous, the arrival of immigrants has long-run distributional consequences, helping complementary workers and hurting those who are substitutes.

⁷The unemployment rate of African Americans in Miami in 1979 was 8.3%, and rose to 9.6% in 1981. However, in the four comparison cities of Atlanta, Houston, Los Angeles, and Tampa-St Petersburg that did not receive Cuban migrants, the unemployment rate of African Americans rose from 10.3% in 1979 to 12.6% in 1981.

⁸Immigrants may also be attracted to cities with low unemployment and fast job growth, which could result in spurious positive correlations between the share of immigrants in the city labor forces and unemployment rates.

The literature on the economic impacts of immigrants on U.S. workers is mixed, with the results driven in part by assumptions about how U.S. and immigrant workers who are similar in age and education interact, and whether there is an investment response to the arrival of immigrants that increases the demand for labor. The literature has not dealt with agriculture or unauthorized workers specifically. The approach of [Borjas \(2003\)](#), who assumed that similar U.S. and immigrant workers were substitutes, and found significant wage depression for low-skilled workers, would suggest significant wage depression for low-skilled farm workers. Agriculture's investment response, such as planting more crops because immigrant workers are available, is uncertain.

The studies collected in [Smith and Edmonston \(1997\)](#) reach two other conclusions about the benefits and costs of immigration. First, the federal government tends to benefit from immigration, but state and local governments may not. The reason lies in differences between the federal and state tax systems and the benefits provided by each level of government. Most of the taxes paid by immigrants are income and social security taxes withheld by the federal government and used, *inter alia*, to provide social security and health care benefits to elderly Americans. The state and local taxes paid by immigrants are typically lower and, for low-earning immigrants, are relatively low despite the payment of sales and property taxes. Young and low-earning immigrants thus pay most of their taxes to the federal government and consume relatively few federal benefits, but use services disproportionately funded by state and local taxes, including education for their children.

Second, an immigrant's fiscal balance—taxes paid minus the cost of tax-supported services consumed—depends primarily on the immigrant's earnings. One-third of immigrants in the United States, and most of the immigrants employed in agriculture, have not graduated from high school. If these immigrants live in high tax-and-service states such as California, a combination of low incomes and thus low state taxes can combine with extensive public services so that households headed by U.S.-born persons pay higher taxes to provide services to immigrant-headed households. For example, California households headed by Latin American immigrants received an average of \$5,000 more in tax-supported services than they paid in taxes in 1996, largely because they had low incomes (and thus paid lower taxes), and had more children attending public schools ([Smith and Edmonston 1997](#)).⁹

The economics literature suggests that the economic benefits of immigrants to the United States rise with the immigrants' U.S. earnings ([Borjas 1994](#)). This is the major reason why many favor switching from the current immigrant selection system, under which 70% of U.S. immigrants are admitted because they have relatives in the United States, to a Canadian-style point system, which gives priority for immigrant visas to

⁹California households headed by U.S.-born persons paid \$2,700 more in federal taxes than they received in federal benefits in 1996, while immigrants had exactly the opposite fiscal balance—they received \$2,700 more in federal benefits than they paid in federal taxes. If these fiscal-balance estimates are applied to the entire U.S. population, the 89 million households with U.S.-born heads paid an extra \$200 each in 1996 to cover the gap between taxes paid and services consumed by 9 million immigrant-headed households, an “immigrant deficit” of \$15 billion to \$20 billion ([Smith and Edmonston 1997, Table 6–3](#)).

foreigners with high levels of education, knowledge of English or French, and a Canadian job offer (Borjas 1999).

However, if most adult immigrants were college-educated, as in Canada, who would fill farm and similar low-skill jobs? Guest workers, foreign workers expected to return to their countries of origin after a period of employment in another country, are one option. The major problem with guest worker programs is the persistence of both the demand for foreign workers as investment patterns change and the fact that some guest workers find ways to settle, leading to the adage that there is “nothing more permanent than temporary workers.” Guest worker programs persist because some employers make investments that assume their continued availability, as when farmers plant orchards in places with few workers. At the same time, some foreign workers settle, and some foreign communities become dependent on U.S. jobs, making it hard to prevent unauthorized migration if governments decide to reduce or stop guest worker migration (Miller and Martin 1982).

Evolution of Enforcement

The Immigration Reform and Control Act of 1986 (IRCA) introduced fines on employers who “knowingly” hired unauthorized workers, and required that a newly-hired employee and his/her employer sign a form to attest that the worker presented and the employer reviewed documents indicating authorization to work in the United States. However, to avoid making employers act as “immigration cops,” IRCA did not require employers to verify the authenticity of the documents presented by newly-hired workers. Unauthorized workers could therefore present false documents or documents belonging to other legally-authorized workers and be hired, and there would be no sanctions on the employer even if enforcement later determined that the workers were unauthorized.

Illegal migration continued despite IRCA, and a proliferation of false documents allowed unauthorized workers to be hired. Congress recognized the false-document issue in 1996, when it instructed the then-Immigration and Naturalization Service to develop pilot projects to allow employers to check on the authenticity of the documents provided by newly-hired workers. These pilot projects evolved into E-Verify, an internet-based system that allows employers to check data provided by newly-hired workers against Social Security and other government databases. In early 2010, some 182,000 of the 7.4 million U.S. employers participated in E-Verify, according to the Department of Homeland Security (DHS). The number of participating employers has been rising, as more states and the federal government, beginning in September 2009, required its contractors and subcontractors to participate in E-Verify.¹⁰

E-Verify is one component of the efforts to close the labor-market to unauthorized workers, but it cannot detect an illegal immigrant who presents a legal worker’s identification documents. However, the U.S. government does not utilize all of the data available that suggest the presence of unauthorized workers. Some illegal immigrants are detected when

¹⁰Seven States—Arizona, Arkansas, Colorado, Georgia, Mississippi, Oklahoma, and Rhode Island—require employers who have contracts with the state or all employers in the state to use E-Verify to check new hires.

employers pay Social Security taxes, and the Social Security Administration (SSA) sends letters to employers for whom at least 10 names and Social Security numbers (SSNs) do not match SSA records. Continuing its past practices, SSA planned to send so-called No-Match letters to 140,000 employers in the fall of 2007, involving 8.7 million workers with mismatches in 2006 (DHS: [No-Match Enforcement 2007](#)). Most employers ignore these No-Match letters, since the errors flagged by SSA may reflect unauthorized workers, data entry errors, or name changes with marriage.

However, in August 2007 the DHS announced plans to include an enforcement letter with SSA No-Match letters to encourage employers to fire employees who did not clear up discrepancies in their records, or risk fines for knowingly hiring unauthorized workers. Under the DHS proposal, employers would have given affected employees 90 days to rectify discrepancies; if the employees did not correct their records, the employer was expected to fire them. Farm industry leaders predicted catastrophe. Fresno County Farm Bureau leaders, for example, predicted that fruit and vegetables would not be picked, dairy cows would die, and meatpacking facilities would close because of the No-Match enforcement strategy (Clough 2007). A suit filed by employers, unions, and migrant advocates, citing errors in the SSA database that could lead to legal workers being terminated, led to an injunction that prevented No-Match enforcement. In summer 2009, DHS announced that it was abandoning the No-Match enforcement strategy, a policy reversal considered to be among the top 10 stories affecting the fruit and vegetable industry in 2009 (Galbraith 2010).

The limited reach of E-Verify, and the failure of No-Match enforcement, left workplace raids as the major governmental enforcement tool. Meatpacking facilities, which employ 300,000 workers in non-metro counties, have been a frequent target of immigration agents. The industry shifted from urban to rural areas, closer to livestock supplies, in the 1980s. These new rural plants were also more distant from traditional urban union centers (Kammer 2009). Both union membership and real wages fell. Newly-opened rural plants were often larger than the urban plants they replaced, and many operated two shifts, requiring thousands of workers to staff so-called “dis-assembly” lines. In rural areas, meatpackers soon ran out of local workers and began recruitment drives among newcomers to the United States, including refugees and other legal immigrants. Many plants offered current workers and independent recruiters a bonus of \$200 or more for each new worker who stayed on the job at least six months, resulting in the referral and hiring of “falsely documented” workers (Warren 2006).

Some employers respond to enforcement with higher wages, while in other cases enforcement leads to the closure or sale of plants. On December 12, 2006, immigration agents inspected workers at six Swift & Company beef and pork processing plants that participated in E-Verify, arresting approximately 20% of the 7,000 workers employed on the first shift. Many workers in the second shift did not show up for work. Swift raised wages an average of 8% in order to attract legal replacement workers and resumed full production within five months (Kammer 2009).

In another instance, a raid at kosher meat packer Agriprocessors in Postville, Iowa on May 12, 2008 removed 389 of 900 workers. In an unusually speedy prosecution, 297 mostly Guatemalan workers pleaded guilty to federal criminal charges that resulted in five-month sentences for

knowingly using Social Security cards or documents that belonged to others to obtain their jobs. Federal prosecutors extracted guilty pleas from the arrested workers by warning them that, if they did not plead guilty, they would face mandatory two-year prison terms for felony identity theft.¹¹ In the aftermath of the raid, Agriprocessors' managers were charged with knowingly hiring unauthorized workers. The population of Postville shrank as the plant was closed before being sold, and by the summer of 2009, one-third of the 700 homes in Postville were for sale (Flora 2009).

In the summer of 2009, DHS changed the focus of workplace enforcement from employees to employers. Now, instead of targeting unauthorized workers, immigration inspectors were required to obtain indictments or commitments from U.S. attorneys to prosecute an employer before conducting a workplace raid likely to lead to the arrest of workers "for civil immigration violations at a work site." In explaining this shift, the head of DHS's Immigration and Customs Enforcement agency said: "We are going to focus more attention on investigating and prosecuting employers, rather than starting out with simply focusing on the workers themselves ... I intend to try to identify and prosecute ... employers who employ illegal labor in abusive conditions, don't pay them the minimum wage, make them work hours beyond the 40-hour week work, don't pay them overtime" (DHS: Border, Interior, Services 2009).

Immigration Reform and AgJOBS

While enforcement strategies were evolving, Congress considered various immigration reform proposals but none resulted in a new law. In December 2005, the House of Representatives approved the Border Protection, Anti-terrorism, and Illegal Immigration Control Act on a 239–182 vote. This bill called for mandatory screening of newly-hired, as well as existing employees to ensure they were authorized to work, more fencing along the Mexico-United States border, and legal and policy changes to make life more difficult for unauthorized foreigners, such as making "illegal presence" in the United States a felony, and encouraging State and local police to receive training in order to check the immigration status of persons they encountered.¹² The House bill, taking an enforcement-and-attrition approach to illegal migration, did not include a guest worker or legalization program.

The Senate took a "comprehensive approach" to immigration reform in May 2006, approving the Comprehensive Immigration Reform Act (CIRA) on a 62–36 vote. The CIRA included many of the same enforcement provisions that were in the House bill, for example the requirement that employers use an internet-based system such as E-Verify to check the legal status of newly-hired and current employees, and more fencing on the Mexico-United States border. However, CIRA also offered a path to

¹¹In May 2009, the U.S. Supreme Court ruled unanimously that federal identity-theft laws may not be used to prosecute unauthorized workers who use false SSNs to get jobs unless the workers knew the SSNs they used belonged to someone else. Most of the Guatemalan workers had served their sentences and been deported before this Supreme Court ruling in *Flores-Figueroa vs. United States* (Agriprocessors, Greeley, Poultry 2009).

¹²Making "illegal presence" in the United States a felony would prevent most unauthorized foreigners from legalizing their status, since foreigners who commit felonies in the United States are normally not eligible for immigration visas.

legal immigrant status for unauthorized foreigners in the country for at least two years, and a new guest worker program with a “market mechanism” to adjust the number of guest worker visas available.¹³

In May through June 2007, the United States Senate again considered comprehensive immigration reform. However, the Senate’s 2007 bill would have been “tougher” on illegal migration by, for example, not allowing the entry of additional guest workers until the president certified that stepped-up enforcement had reduced unauthorized migration. Another provision would have required unauthorized foreigners seeking legalization to leave the United States and re-enter legally, a “touchback” requirement that migrant advocates said would deter migrants fearful of not being allowed to return to the United States. The bill stalled with insufficient votes.

Both Senate bills included a special legalization and guest worker program for agriculture, the Agricultural Job Opportunity Benefits and Security Act or AgJOBS. The major provisions of AgJOBS, including legalization for unauthorized farm workers and employer-friendly changes to the H-2A guest worker program, were negotiated by farm employers and farm worker advocates in December 2000.¹⁴

AgJOBS echoes the agricultural provisions of IRCA in 1986, which legalized illegal farm workers and gave farmers easier access to guest workers in the event of farm labor shortages. However, only the agricultural legalization provisions of IRCA were effective; a flood of unauthorized foreigners in the late 1980s made it unnecessary to implement the new guest worker provisions (Martin 1994).

The current version of AgJOBS, introduced in May 2009 in the Senate, would allow up to 1.35 million unauthorized farm workers who did at least 150 days of farm work in the 24-month period ending December 31, 2008, to apply for a new type of visa, a Blue Card. The Blue Card would give previously unauthorized foreigners a probationary immigration status that would allow them to live and work legally in the United States for five years. Blue cards could be converted to regular immigrant visas, sometimes called Green cards, if their holders continued to do farm work, and the unauthorized family members of Blue Card holders in the United States could obtain a “derivative” probationary legal status that would also allow them remain in the United States and obtain work permits.¹⁵

Legalization, the major goal of farm worker advocates, is balanced in AgJOBS by employer-friendly changes to the H-2A guest worker program. The current H-2A program allows farm employers to request certification from the U.S. Department of Labor (DOL) to have foreign workers

¹³If employers requested all available visas before the end of the year, the number of visas available would rise for the following year. The House did not consider the Senate bill.

¹⁴The H-2A guest worker program allows farm employers to be certified by the U.S. Department of Labor as needing foreign workers to fill seasonal U.S. farm jobs, generally those lasting less than 10 months.

¹⁵Blue Card holders could earn an immigrant status for themselves and their family members before their Blue Cards expired by continuing to do farm work. To illustrate the complexity of the record-keeping that would be required, there are three continued-farm-work options: (1) performing at least 150 days (a day being at least 5.75 hours) of farm work a year during each of the first three years after enactment; (2) doing at least 100 days of farm work a year during the first five years after registration; or (3) doing at least 150 days of farm work in any three years, plus 100 days in a fourth year (for workers who do not do 150 days in the first three years).

admitted “temporarily to the United States to perform agricultural labor ... of a temporary or seasonal nature.” (PL 99–603, Title III, Part A, Sections 301–05). DOL certification involves, *inter alia*, ensuring that two conditions are satisfied: (1) there are not sufficient workers who are able, willing, and qualified, and who will be available at the time and place needed, to perform the labor or services involved in the employer petition; and (2) that the employment of the alien in such labor or services will not adversely affect the wages and working conditions of workers in the United States similarly employed.

DOL certifies approximately 95% of employer requests to hire H-2A workers, granting permission to fill 86,000 farm jobs with foreign workers in Fiscal Year 2009, up from less than 50,000 a year in the late 1990s.¹⁶ Nonetheless, the H-2A program is often described by employers as broken and bureaucratic, and by worker advocates as being unable to protect the interest of U.S. and foreign workers (Karst 2007; Chavez-Thompson 2007). Employers often cite as problems the requirement that they must apply for foreign workers at least 45 days before they expect to employ them, must try to recruit U.S. workers, and must provide both foreign- and out-of-area U.S. workers with free and approved housing.¹⁷ Worker advocates cite cases of employers not hiring workers they consider qualified and sometimes housing workers in substandard dwellings (U.S. Department of Labor. Office of the Inspector General. 1998).

AgJOBS would make three major employer-friendly changes to the H-2A program. First, employers could attest that they face a labor shortage rather than wait for the DOL to certify that foreign workers are needed, effectively shifting control of the border gate from the DOL to employers. After growers attest to the DOL that they have vacant jobs, are paying at least the minimum or prevailing wage, and will comply with other H-2A requirements, DOL would review the employer job offers for “completeness and obvious inaccuracies” and approve the offer within seven days, allowing foreign H-2A workers to arrive and go to work. DOL’s role would be to respond to complaints of violations of H-2A regulations.

Second, rather than provide free housing to H-2A and out-of-area U.S. workers, AgJOBS would allow farm employers to pay a housing allowance of \$1 to \$2 an hour, depending on local costs, to rent two-bedroom units that are assumed to house four workers.¹⁸ Third, the Adverse Effect Wage Rate (AEWR), the wage that must be paid to legal guest workers to protect U.S. workers from wage depression, would be frozen at 2008 levels and studied.¹⁹ If Congress failed to enact a new AEWR within three years, the AEWR would be adjusted based on the three-year change in the Consumer Price Index, eventually rising with the index up to a maximum 4% per year.

¹⁶In Fiscal Year 2009, employers filed 8,150 labor certification applications requesting 103,955 H-2A workers, and DOL certified 94%, approving requests for 86,014 H-2A workers.

¹⁷H-2A regulations and data are found at: www.foreignlaborcert.doleta.gov/h-2a.cfm.

¹⁸State governors would have to certify that there is sufficient rental housing for the guest workers in the area where they will be employed in order for H-2A employers to pay a housing allowance rather than provide free housing (Congress: AgJOBS 2007).

¹⁹The AEWR is currently the annual average earnings of field and livestock workers reported by employers to the National Agricultural Statistics Service four times a year and reported in Farm Labor (<http://usda.mannlib.cornell.edu/MannUsda/viewDocumentInfo.do?documentID=1063>).

If AgJOBS is enacted, the H-2A program would change to allow dairies to hire legal guest workers. Currently, only employers offering seasonal farm jobs may hire H-2A workers, although under certain circumstances sheep and goat herders have been allowed to work in the United States continuously with H-2A visas for up to three years. Under AgJOBS, dairy workers would be added to this exception. Some H-2A program requirements would not change: employers must reimburse H-2A workers for their transportation and subsistence costs if they complete their work contracts; employers must continue to hire U.S. workers who request jobs until half of the work period is completed; and employers must guarantee work to H-2A workers for at least three-quarters of the contract period that they specify in their applications for approval to hire H-2A workers.

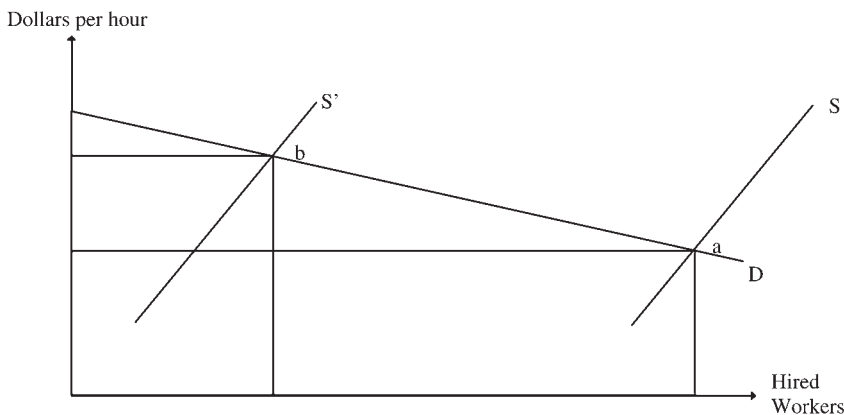
AgJOBS promises continuity and change in the farm workforce. The continuity involves newcomers from abroad filling farm jobs; the change would be that these workers would be legal rather than unauthorized. Newly-legalized farm workers who want to fulfill their farm work requirements as soon as possible may temporarily increase the labor supply. However, as they leave for non-farm jobs, they are likely to be replaced by H-2A workers costing \$1 to \$2 an hour more than current unauthorized farm workers because of the housing allowance.

Adjustment Scenarios

Immigration reform is one of several potential cost-increasing changes facing farm employers. Most labor-intensive agriculture takes place in states that have minimum wages higher than the federal minimum wage of \$7.25 an hour, and most of these state minimum wages will continue increasing with the cost of living. Second, health care reform could lead to a pay-or-play system under which employers who do not provide an acceptable level of health insurance to their employees would have to pay an additional payroll tax—eight-percent has been suggested. Altogether, the triple play of immigration reform, rising minimum wages, and potential health-care taxes could substantially increase farm labor costs.

One adjustment scenario assumes that higher wages reduce the demand for labor in a seamless fashion. Point **a** in figure 3 portrays the U.S. farm

Figure 3 Smooth adjustments to rising wages



labor market under current conditions. If legalization accelerated the shift of workers out of the farm workforce, and immigration enforcement slowed new entries, wages would be expected to rise as the labor supply curve shifted to the left. If the demand for labor adjusted smoothly to rising wages, the new equilibrium would be at **b**, with fewer total farm workers employed at higher wages.

An alternative adjustment scenario is possible. Agricultural history shows that innovations are induced by the relative prices of workers, machines and farm land, as growers adjust agricultural systems to save on relatively expensive inputs (Hayami and Ruttan 1985). When labor is relatively scarce and wages rise, producers seek labor-saving innovations. However, substituting machines for workers can be a complicated process, since machines cannot always duplicate the judgment and dexterity of skilled agricultural workers.

Beginning from the same starting point at **a** in Figure 3, enforcement could reduce the supply of farm labor and cause wages to rise. However, the demand for labor may not fall smoothly. Instead, at a critical wage level, growers could adopt mechanical harvesters that might not have been economical at lower wages, or stop producing labor-intensive crops, causing the demand for labor to drop sharply.²⁰ Mechanization may induce structural changes, including fewer and larger growers, packers, and processors as a result of investments in specialized machinery. Other reasons for a sharp drop in demand for labor in the face of rising wages include shrinking domestic production as imports become more competitive.

The mechanization of the processed tomato harvest illustrates a sharp drop in demand for labor in response to rising wages linked to less immigration. In 1960, Braceros, Mexicans formally admitted as guest workers, comprised 80% of the 46,000 peak harvest workers employed to pick California's 2.2 million tons of processing tomatoes. With the Bracero program scheduled to end in 1964, tomato processors Hunts and Heinz began building processing plants in Mexico under the assumption that they would be unable to find sufficient U.S. workers at competitive wages (Thompson and Blank 2000). Tomato growers had two alternatives—stop growing processing tomatoes or find a mechanical harvester to keep U.S. production competitive. A mechanical harvester was developed, and by 1970 almost all California processing tomatoes were harvested mechanically. Today the United States is the largest producer of processing tomatoes in the world.

When Braceros were available, there was little interest in, or funding for, labor-saving mechanization research. As the end of the Bracero program approached, federal and state government subsidies supported a systems approach to mechanization, funding plant scientists to develop uniformly ripening tomatoes that could be harvested in one pass through a field, and engineers to design machines to cut tomato plants, shake off the tomatoes, and convey them past hand and electronic sorters before dumping them in trucks outfitted with tubs for hauling to processors. The mechanization of the processing tomato harvest also illustrates the

²⁰After adoption of mechanical harvesting reaches a certain level, packing and processing facilities may decide to accept only mechanically harvested products, which would result in rapid adoption by the growers who continue to produce the commodity.

potential key role for government to foster or slow labor-saving changes. In this case, the government eliminated the guest worker program, but subsidized mechanical research, which provided an alternative to ample labor supply.

This rapid labor-saving mechanization was not anticipated. As Congress debated whether to end the Bracero program, the *California Farmer* asserted that "... all agree that the State will never again reach the 100,000 to 175,000 acres [of processing tomatoes] planted when there was a guaranteed supplemental labor force in the form of the bracero... The industry sees no hope of filling the [labor] gap in tomatoes from the domestic ranks even if competition for workers drives wages up to the average factory wage."²¹

Many growers say they do not raise wages to retain or attract workers because they "know" that higher wages cannot increase the labor supply. Higher wages may be more likely to prompt mechanization, as with processing tomatoes, than attract more workers into the fields, thus highlighting the idea that the major responses to rising wages in the farm labor market are on the demand, rather than the supply side of the labor market (Martin 2009).

There were many other labor-saving changes during the 1960s, when farm wages rose rapidly. Hand-harvested commodities were often picked into 50 or 60 pound boxes or cartons, but rising wages prompted a shift to bulk bins in fields and orchards, and forklifts to load bins onto trucks, thus eliminating thousands of jobs. Conveyor belts moving slowly through fields allowed workers to pick melons and place them on the belt rather than collect melons in a bag and carry them to a waiting truck. By making work easier, women and older workers were more likely to join and remain in harvesting crews.

Most publicly subsidized labor-saving mechanization research at universities came to a halt in the early 1980s for two major reasons: a rising number of unauthorized foreigners, and lawsuits. The number of foreigners apprehended just inside the U.S. border almost doubled, from less than a million in 1980 to 1.8 million in 1986 (DHS, *Immigration Statistics Yearbook* 2008). The University of California was sued by the United Farm Workers union and California Rural Legal Assistance organization in 1979 for using tax funds to mechanize the processing tomato harvest, allegedly displacing farm workers and small farmers. The suit was eventually settled, with the University of California agreeing to include worker representatives on advisory committees that evaluated proposals for tax-supported mechanization research, but the publicity reduced federal and state funds for such research (Martin and Olmstead 1985).

The mechanization experience of the processing tomato industry provides several lessons for contemporary debates about how labor-intensive agriculture would adjust to higher labor costs. First, most analysts conclude that farmers will mechanize or reduce production before raising wages high enough to induce U.S. farm workers into the fields, highlighting the fact that the major responses to rising wages in the

²¹There were many other predictions of less production without Braceros. California had approximately 10,000 acres of strawberries in the early 1960s, and some thought production would decline; California had 35,000 acres of strawberries in 2009.

farm labor market are on the demand rather than the supply side of the labor market (Huffman 2007; Martin 2009). Second, those closest to the industry were unable to predict the speed of the adjustments that occurred.²² Third, the government played a critical role in speeding mechanization via research funding. Fourth, mechanization affects both how a crop is grown and processed, and the structure of the industry. Instead of tomatoes being one of several crops grown on diversified farms, processing tomatoes often became the major or only crop grown on larger and more specialized farms because of investments in harvesting machines.

Advances in biology, engineering, and packing and processing have placed several major crops on the verge of mechanization (Huffman 2007). Both migration and research policies are likely to play key roles in determining how quickly labor-saving changes occur in labor-intensive agriculture. Rising wages and increased imports of fruit and vegetables from low-wage countries, which can put price pressure on U.S. growers, are encouraging labor-saving mechanization in the United States. There are strong incentives for growers, grower organizations, and mechanization firms to invest in research to develop labor-saving machines. Private benefits and costs however, *may* not be adequate to foster the optimal level of research when social benefits and costs are assessed. Now there is renewed interest in agricultural mechanization associated with loss, or potential loss, of unauthorized foreign workers. The Food, Conservation, and Energy Act of 2008 created the U.S. Department of Agriculture's (USDA) Specialty Crop Research Initiative, providing \$230 million for fiscal years 2009–12 to support research on five issues critical to the future of the U.S. fruit and vegetable industry, including mechanization. This is the first major federal investment in mechanization research for fruit and vegetables since the early 1980s. Research funded under this initiative requires industry matching funds.

Conclusions

Over 30% of all foreign-born U.S. residents are unauthorized, and the United States has been debating what to do about an unauthorized foreign population equivalent to that of Pennsylvania for over a decade. Congress has considered the enforcement-and-attribution approach and the comprehensive approach to immigration reform without either becoming law. Both approaches attempt to reduce the flow of illegal labor at the border and improve screening at workplaces to ensure that only legal immigrants are employed. The comprehensive approach also includes AgJobs, a special legalization and revised guest worker program for farm workers and farm employers.

Immigration reform may increase farm labor costs that have been held down over the past two decades by large-scale illegal migration and the general absence of health and other job-related benefits in

²²Alternatively, other fruit and vegetable industries have incorrectly predicted imminent mechanization for years.

agriculture. If farm wages rise, the major impact may be a reduced demand for labor rather than an increased supply of U.S. farm workers. This reduced demand for labor can be continuous if growers reduce labor inputs incrementally or use labor more efficiently, or discontinuous if farmers switch crops or mechanize. Large-scale illegal immigration has benefited labor-intensive U.S. agriculture. Immigration reform or stronger enforcement of existing laws could raise farm wages. As in the past when labor was tight, the federal government can aid farmers by giving them easy access to guest workers. Alternatively, if the government determines that there is economic justification for federal investment in research and development, it could encourage mechanization by subsidizing labor-saving research.

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