

Migration and US agricultural competitiveness

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Abstract

Agriculture has one of the highest shares of foreign-born and unauthorized workers among US industries; over three-fourths of hired farm workers were born abroad, usually in Mexico, and over half of all farm workers are unauthorized. Farm employers are among the few to openly acknowledge their dependence on migrant and unauthorized workers, and they oppose efforts to reduce unauthorized migration unless the government legalizes currently illegal farm workers or provides easy access to legal guest workers. The effects of migrants on agricultural competitiveness are mixed. On the one hand, wages held down by migrants keep labour-intensive commodities competitive in the short run, but the fact that most labour-intensive commodities are shipped long distances means that long-run US competitiveness may be eroded as US farmers have fewer incentives to develop labour-saving and productivity-improving methods of farming and production in lower-wage countries expands.

Keywords: Agriculture, farm labour, labour markets, competitiveness, meatpacking

Introduction

Agriculture in the western United States has long been associated with migrant workers. Unlike the usual process of agricultural development, in which small family farms are consolidated as labour-saving technologies enable farm operators to farm more land, and ex-farmers and their children move to cities, agriculture in California and other western states began with large tracts of land granted by the Spanish and Mexican governments. These large ranchos primarily grazed cattle and grew grain without irrigation (Martin, 2009:Ch.2).

Transportation and interest costs were lowered by the transcontinental railroad after 1869, which gave California and other western farmers an incentive to produce fruits and vegetables that could be dried or canned and shipped to distant markets. Most observers expected large farms to be broken into family-sized units to obtain seasonal workers, recreating an Iowa family-farm system in western states that produced fruits and vegetables rather than corn and soybeans. However, Chinese workers who were shut out of nonfarm labour markets by discrimination and newcomers from Japan and other countries who could not find nonfarm jobs were available to be seasonal farm workers, and their availability made it unnecessary to break up large farms to obtain a seasonal farm work force (Martin, 2009:Ch.2). Migrants from the Philippines, the Midwestern Dust Bowl, and Mexico followed, putting labour-intensive agriculture on an immigration treadmill, always looking

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for new workers abroad to replace those who move up in the US labour market by finding nonfarm jobs.

The fact that labour-intensive US agriculture usually found new workers willing to accommodate to the seasonal demand for labour in crop production meant that there was less need for rather labour-saving innovations or, if certain crops defied mechanization, productivity increasing changes or rising imports. In this way, US farming is sometimes just as labour-intensive as in lower-wage countries although, once commodities leave the farm, the US packing and processing system is among the world's most efficient. However, one argument against immigration reforms that raise labour costs is that US farmers will be less able to compete with imports from lower-wage countries.

US agriculture

Most of the 2.2 million US farms enumerated in the 2007 COA are part-time, hobby, and retirement operations that lose money farming but survive because of income from nonfarm jobs, social security, and other sources.¹ Most are family farms, defined by the US Congress in the Food Security Act of 1985 as a farm that uses less than 1.5 person-years of hired labour and has no hired manager.²

Most US family farms are diversified, producing crops and livestock and providing work for farm operators and their family members most months of the year. Typical tasks on diversified family farms in the Midwest and south include planting corn and soybeans in the spring, harvesting these crops in the fall, and tending livestock year-round. The mechanization of many farm tasks has enabled family farms to expand and permit one or more family members to be employed in nonfarm jobs. In 2007, over 85 per cent of the total income of farm families was from nonfarm sources (Hoppe and Banker, 2010:39).

Most hired farm workers are employed on relatively large farms that produce fruits and nuts, vegetables and melons, and horticultural specialties such as flowers, nursery plants, and mushrooms (FVH commodities). The production of FVH commodities is much more concentrated on fewer and larger farms than the production of corn and wheat. Instead of thousands of roughly equal-sized farms producing grain, the 10 largest US farms that produce

¹ Agriculture is the production of food and fibre on farms, which are defined in the US Census of Agriculture (COA) as places that normally sell at least \$1,000 worth of farm commodities a year.

² Other definitions of a family farm require the farmer and his/her family members to do more than half of the work on the farm. USDA's Economic Research Service (ERS) (2012) emphasizes that "there is no hard-and-fast definition of a family farm" and that definitions of family farm have changed over time. Since 2005, ERS defines family farms as those "in which the majority of the business is owned by the operator and individuals related to the operator by blood, marriage, or adoption." (www.ers.usda.gov/briefing/wellbeing/glossary.htm#familyfarm). According to this ownership-based definition, about 98 per cent of US farms are family farms.

lettuce, table grapes, and some other FVH commodities account for half or more of total production. These “factories in the fields” hire hundreds or thousands of seasonal farm workers, and their quest for workers willing to accept seasonal work at relatively low wages lies at the heart of several perennial farm labour issues, including a century of Mexico-US migration.

Most US farm output is from a relatively few large farms. The 250,000 US farms that each had sales of \$250,000 or more in 2007 accounted for almost 85 per cent of total farm sales. There were less than 60,000 million-dollar farms, each with annual sales of \$1 million or more, but they accounted for over half of US farm sales.³ These larger farms receive most government payments to support agriculture because government subsidies are linked to farm output.

About 482,000 US farms, less than a quarter of the total, reported that they had expenditures for hired farm labour in 2007. Farmers spent almost \$22 billion on workers hired directly in 2007, and almost half of farm labour expenditures were incurred by the 61,270 farms that hired workers to produce FVH commodities. Second, half of the 15,000 US farms that had \$250,000 or more in labour expenditures produced FVH commodities. The COA does not report the labour expenditures of these 15,000 FVH farmers, but they likely accounted for over 80 per cent of the total.

Some 183,000 farms paid \$3.4 billion to contractors and other intermediaries to bring workers to their farms; many of these farms also hired farm workers directly. Two-thirds of contract labour expenses were paid by FVH farms, emphasizing that farms producing fruits and vegetables are most likely to have contractors bring crews of workers to their farms. The 11,000 farms that had contract labour expenses of \$50,000 or more likely accounted for over 80 per cent of the total.

Table 1. US: Agriculture and Total Employment (000): 2000, 2010, 2020

	Change				
	2000	2010	2020	2000-10	2010-20
Agriculture	2,396	2,135	2,005	-11%	-6%
Wage & Salary	1,354	1,282	1,236	-5%	-4%
Operator and family	1,042	853	769	-18%	-10%
Share	43%	40%	38%		
US total	143,236	143,068	163,536	0%	14%

Sources: Sommers and Franklin (2012): 14 and Henderson (2012): 66.

Seasonal workers are often distinguished from regular or year-round workers by how long they are employed on one particular farm. There were 2.6 million workers hired directly by US farmers in 2007, and two-thirds worked

³ The 57,000 farms that each had sales of at least \$1 million in 2007 accounted for \$176 billion or 60 per cent of total sales, while the 5,600 that each had annual sales of \$5 million or more accounted for \$83 billion or 28 per cent of total farm sales. Very large farms specialize in beef, dairy, and FVH commodities (Hoppe and Banker, 2010: 10).

on the responding farm for less than 150 days, suggesting they were seasonal workers⁴. Three-fourths of the workers employed on fruit and nut farms, and half of the workers employed in greenhouse and nursery operations were seasonal.

One reason for confusion about farm labour is that statistical agencies measure different aspects of the farm labour market. Table 1 summarizes average employment on farms, and emphasizes that the share of hired workers has risen from 57 per cent in 2000 to 60 per cent in 2010. Both hired or wage and salary and farm operator employment are projected to decline, but operator and family employment is expected to decline fastest, raising the share of hired workers in average employment.

3 S's: Sales, labour's share, seasonality

Sales, labour's share of production expenses, and seasonality define the essential features of FVH agriculture and hired farm workers. First, sales emphasizes that FVH agriculture involves a relatively small number of US farms and a small share of US farm land, but FVH farm employers pay almost half of all farm wages. Second, labour's share refers to the fact that labour costs may be a third of the cost of producing many fresh fruits and vegetables, and often the most "controllable" expense for farm employers. Third, seasonality is a persisting dilemma because more workers are needed during some months than others. Seasonality raises questions for farmers and workers: will there be a sufficient number of workers available when they are needed, and will seasonal workers earn enough when work is available to support themselves and their families when there is no farm work?

US farm sales of \$300 billion in 2007 were divided almost evenly between crops and livestock. In most states, crop agriculture is dominated by low value-per-acre field crops such as wheat, corn, and soybeans that are planted and harvested by machine. Fruits, vegetables, and horticultural specialties were planted on only six per cent of the 417 million acres of US crop land in 2007, but they generated a third of crop sales.⁵ In California and other states that produce most FVH commodities, crop sales exceed livestock sales, and high-value FVH commodities dominate crop sales.⁶ California has been the leading farm state since 1950 because it produces high-value FVH commodities, and today such commodities are almost 60 per cent of California's farm sales.

Fruits, vegetables, and horticultural specialties are labour intensive in the sense that labour is often the largest single production expenditure. With la-

⁴ An individual employed on two farms is counted twice in these data.

⁵ There were 922 million acres in farms in 2007, including 416 million acres of farm land. Fruits and nuts were farmed on 12 million acres, vegetables on nine million acres, and greenhouse and nursery crops on four million acres (Statistical Abstract, 2012, Table 823).

⁶ In California, for example, crop sales were two-thirds of the total \$35 billion farm sales (2007), and 85 per cent of crop sales were fruit and nuts (\$11 billion), vegetables and melons (\$5.5 billion), and horticultural specialties such as flowers and mushrooms (\$4 billion).

bour's share of the cost of producing fresh fruits such as strawberries or vegetables 20 to 40 per cent, farmers often spend \$2,000 per acre on labour for a crop that yields \$6,000 an acre in revenue. More important, labour is a "controllable" expense in the sense that a farmer may more easily negotiate whether to pay \$0.25 or \$0.26 cents for picking a 25-pound tray of raisin grapes than negotiate the price of seeds or fertilizer.

Seasonality means that peak employment on a farm can be 5 to 10 times greater than trough or low period employment, as when 100 workers are employed in June and 10 in January. Since many FVH farms specialize in one or a few commodities, thousands of apple or grape harvesters may be employed one week and jobless a few weeks later. Migrants are one of the several sources of seasonal workers.

Farmers usually define the seasonal farm labour problem in terms of labour costs, asking how to ensure that there will be a sufficient number of seasonal workers available at wages they can afford to pay. One answer has been to open border gates to workers from poorer countries, or leave border gates ajar so that foreigners from poorer countries can enter and work illegally. Workers are eager to leave rural Mexico and elsewhere because they can earn more in a season at US wages than they could earn in a year at home.

In contrast, worker advocates often begin with labour market outcomes that they find substandard. Seasonal farm workers earned an average \$10 an hour in 2012 for about 1,000 hours of farm work a year, making their earnings \$10,000 a year. Compared to other US production workers, who averaged \$20 an hour, seasonal farm workers earn half as much and work half as many hours, so their annual earnings are only a fourth of what full-time nonfarm workers make.

Thus, farmers want the government to open doors to foreign workers who can earn more in the US than at home. Worker advocates, by contrast, have been divided about what they want government to do about farm worker poverty. Worker advocates who believe in the Jeffersonian ideal of family farms⁷, such as UC Berkeley economist Taylor (1937),⁸ argued during the 1930s that the government should break up large farms and help farm workers to become small farmers. Lawyer McWilliams (1939), on the other hand, thought that California's "factories in the fields" were inevitable and urged that factory labour laws be extended to the hired farm workers employed on them. UC Berkeley economist Fuller (1939) showed how farm wages kept low by immigration raised land prices and gave landowners an incentive to find more seasonal workers willing to accept low wages to preserve and enhance the value of their land. Like McWilliams, Fuller urged the government to ad-

⁷ The third US President, Thomas Jefferson, was an agrarian fundamentalist who believed that farming was both a business and a way of life that would preserve respect for democracy and private property.

⁸ Taylor advocated the creation of small fruit and vegetable farms in California during the 1930s that would market their crops via coops.

mit fewer Mexican Bracero workers in order to put upward pressure on farm wages and to give farm workers the right to form unions that could bargain for higher wages with employers.

Government reacted to these very different pressures from farmers and farm worker advocates by yielding to both. On the one hand, federal and state governments sensitive to assertions that labour shortages would leave crops rotting in the fields have generally assured farmers a sufficient supply seasonal workers to get crops harvested. These policies took many forms, from admitting guest workers to tolerating unauthorized migrants, and from delaying school starting times in the fall so that students could do farm work to providing prisoners to do farm work. Assured of an ample supply of seasonal workers at "reasonable" costs, farmers had few qualms about planting apple or orange trees in remote places because they assumed seasonal workers would be available when they were needed.

Governments also responded to pleas to help farm workers. Federal labour laws that initially excluded farm workers were amended to require most farmers to pay their workers at least the federal minimum wage and to provide them with unemployment insurance.⁹ States such as California went beyond federal laws and offered farm workers more union rights than are available to most nonfarm private-sector workers. The federal government, during the 1960s War on Poverty, established programs to assist poor farm workers and their families with education, housing, training, health and other services.¹⁰

Farm labour policy exhibits the contradictions common in government responses to pressure groups that have different definitions of socio-economic problems that suggest different solutions. Contradictions abound even within federal agencies. For example, the US Department of Labour supports employment and training programs that give farm workers the skills needed to raise their earnings by finding nonfarm jobs and also certifies over 95 per cent of the requests of farm employers seeking approval to recruit and employ H-2A guest workers.

⁹ Federal labour law coverage of farm workers is incomplete. Farm workers remain excluded from the National Labour Relations Act, and some workers employed on small farms are not covered by minimum wage laws. Children are allowed to work in agriculture but not in non-farm jobs.

¹⁰ Today, a dozen federal programs that cost \$1 billion a year assist MSFWs and their children, including the Migrant Education Program, Migrant Health, Migrant Head Start, and the National Farmworker Jobs Program (Federal MSFW Programs. 2010. Rural Migration News. January. Volume 17 Number 1. http://migration.ucdavis.edu/rmn/more.php?id=1588_0_3_0). Many of the federally funded assistance programs were launched during the 1960s war on poverty to help migrant and seasonal farm workers (MSFWs) and their children to "escape" from farm work. At the time, farm wages were rising rapidly, many farm tasks were being mechanized, and it was assumed that there would be far fewer jobs for entry-level hand workers in US agriculture (Martin and Martin, 1993).

3 C's: Concentration, contractors, and conflict

The production of labour-intensive FVH commodities is concentrated on a relatively few large farms,¹¹ but the concentration of employment does not rise in lockstep with fewer and larger FVH farms because large producers can hire seasonal workers directly and indirectly via intermediaries. Direct hires are workers that the farm employer recruits, supervises, and pays, while indirect hires are workers brought to farms by contractors, custom harvesters and other intermediaries who usually handle recruitment, training, supervision on the job, and payment.

Contractors and other intermediaries should be a win-win proposition for employers and workers. Specialists who find a series of jobs for seasonal workers can improve labour market efficiency by reducing uncertainty about the availability of labour for farmers and allowing workers to work rather than to search for jobs. However, the differing incentives and concerns of farmers and contractors can yield simultaneous labour shortages and surpluses.

A combination of a lack of a centralized information system to match workers and jobs and differing incentives can lead to simultaneous labour shortages and surpluses. Farmers have an incentive to request more workers sooner than they are truly needed, since they do not pay workers who are waiting for work to begin, and contractors often promise more workers than are available in order to win a farmer's business. Farm employer complaints of labour shortages receive more attention than worker complaints of unemployment.

Farm labour contractors receive a commission of 20 to 40 per cent on top of wages paid to workers to cover their costs and earn a profit from the difference between what a farmer pays to have work done and what the contractor pays to workers. Farmers, who survey themselves to establish "standard" commission rates, are usually in a stronger bargaining position than contractors, many of whom are ex-farm workers with limited capital and business experience. Thus contractors may accept money-losing commission rates from farmers, and nonetheless turn a profit by not paying taxes or charging newly arrived migrants for services such as housing, rides to fields and cashing checks.

The usual response to widespread contractor violations of labour, tax, and other laws is more enforcement. However, labour law enforcement typically depends on complaints, and newcomers from abroad are unlikely to know about their rights or how to complain of violations.

¹¹ COA data do not permit top-10 measures of concentration. The 2007 COA reported that 4,700 fruit, berry and nut farms, each with over \$1 million in sales, comprised 4 per cent of this type of farm but accounted for 67 per cent of the sales. Vegetable and melon sales were even more concentrated; the 4,900 farms with sales of over \$1 million in 2007 made up just 7 per cent of this type of farm, but accounted for 84 per cent of sales.

3 R's: Recruitment, remuneration, and retention

All labour markets match workers and jobs by performing three basic functions: recruitment, remuneration or motivation, and retention. These 3 R's are handled in unique ways in US agriculture. For example, farmers are more likely to ask current workers to refer friends and relatives to fill vacant jobs than to place ads in newspapers or on the radio seeking workers. Network recruitment, in turn, generally assures that current workers recruit only those who can do the job, and current workers often train the newcomers they bring into the crew, who may be relatives and friends, which minimizes recruitment and training costs for farm employers.

There are alternatives to network recruiting. An efficient recruitment mechanism in seasonal industries such as agriculture is a central clearinghouse that allows farmers to list job vacancies and workers to seek jobs. Such a clearinghouse could be operated by (groups of) employers, unions via hiring halls, or the public Employment Services. Until the early 1970s, the Employment Service and employer associations acted as clearinghouses for seasonal jobs and workers.¹²

The second function of labour markets is to remunerate or motivate workers. There are two major remuneration systems in agriculture: hourly and piece rate.¹³ Employers pay hourly wages when they want slow and careful work, such as to prune trees and vines, and when the employer can control the pace of the work, as when a crop such as broccoli is picked and packed in the field by workers walking behind a machine whose speed is controlled by the driver/employer. Piece rates are common when it is hard to regulate the pace of work, as when workers climb trees to pick fruit (and are thus often out of sight), when quality is less important (as for picking oranges that will be processed into juice), and when an employer wants to keep labour costs constant with a diverse work force.

If workers are paid piece rate wages, labour law requires employers to record the units of work and hours worked of each worker. If a piece rate worker does not earn at least the minimum wage, the employer must provide "make up" pay so the worker gets at least the minimum wage¹⁴. Most farm employers pay the minimum wage or \$0.50 or \$1 an hour more, and many increase their entry-level wage when the minimum wage rises. Most data sources report average hourly earnings, which reflect what workers who are employed under a variety of wage systems, hourly and piece rate, actually earn. The ratio of farm

¹² DOL curtailed ES job matching in agriculture to settle suits charging that it discriminated against farm workers by not telling them about nonfarm jobs (Goldfarb, 1981). Many of the employer associations that served as clearinghouses in California disbanded after their workers voted for union representation in the 1970s.

¹³ Salaries are more common for supervisors and some workers employed in dairies.

¹⁴ The minimum wage is higher than the federal \$7.25 an hour level in most major farm labour states, \$8 in California and \$9.04 in Washington.

to average nonfarm average hourly earnings has been 50 to 60 per cent over the past two decades, meaning that farm workers earn about half as much as nonfarm workers. However, farm workers typically receive fewer employer-paid benefits than nonfarm workers, making their total compensation less than half of the average of nonfarm workers.

The third key labour market function is retention, which involves identifying and developing incentives to keep the best year-round workers and encouraging the best seasonal workers to return the following year. Most US employers have formal evaluation systems that involve supervisors evaluating workers periodically and preparing written reports that are used to make retention decisions and to determine wage increases and promotions.

Few farm employers have formal personnel systems. Instead, the two major methods that link recruitment and worker evaluation illustrate agricultural extremes in personnel practices. Some farmers, especially those who work closely with a few year-round workers in dairies and similar operations, ask current employees to refer friends and relatives who would be good workers and depend on current employees to orient and train the newly hired workers they have recommended. The other extreme involves growers who hire crews of what they consider inter-changeable seasonal workers via contractors or foremen. Contractors and foremen also rely on network hiring, but the farmer where the crews are employed rarely knows who is in the crew or the exact worker turnover rate.

Crew-based hiring explains why recruitment and retention are often part of the same labour market function in agriculture. Do farmers work collectively to flood the labour market with workers, usually by getting border gates opened or left ajar, or recruit and retain the best farm workers for their operation? The best way to ensure plenty of workers is to invest in politicians who will ease access to foreign workers.

Immigrant farm workers

Since the mid-1990s, over half of the hired workers employed on US crop farms have not been authorized to work in the US, increasing the risk that immigration law enforcement could reduce the availability and raise the cost of farm labour. Stepped-up enforcement of existing immigration laws could reduce the supply of farm workers and increase farm labour costs.

More enforcement could be coupled with immigration reforms that legalize unauthorized farm workers and speed the exit of current farm workers from the farm workforce. Grower responses to the higher wages that may result from enforcement or legalization depend on the cost and availability of guest workers and alternatives to manual labour, such as labour-saving machinery and mechanical aids (Calvin and Martin, 2010). Imports of labour-intensive commodities may increase if farm labour costs rise, or there may be a mix of rising imports and mechanization. Some processed commodities may be more sensitive to labour costs than fresh commodities.

Until there is mechanization or rising imports, those attracted to seasonal farm work are likely to be workers whose alternative US job options are limited possibly by a lack of English, education, and other factors. The National Agricultural Worker Survey (NAWS) interviews workers employed on US crop farms, and in recent years found that 70 per cent of workers were born abroad, increasingly in southern (20 per cent) rather than western Mexico (45 per cent).¹⁵ Almost half of crop farm workers have less than seven years of (Mexican) schooling and two-thirds speak little or no English.

Some 1.1 million unauthorized farm workers were legalized in 1987-88 under the Special Agricultural Workers (SAW) program, and there were four SAWs for each unauthorized worker in the first NAWS in 1989 (Martin, 1994). By 1993, as the US economy was recovering from recession, the declining share of SAWs was overtaken by the rising share of unauthorized workers and, by the mid-1990s, there were almost four unauthorized workers for each legalized SAW worker. The unauthorized share of crop workers continued to rise, peaking at almost 60 per cent in 2000. Since then, the unauthorized share of crop workers has been about half, but the share of SAWs has declined to less than 10 per cent.

The experience with the SAW program suggests that, if there were to be another legalization of unauthorized farm workers, most would leave farm work within five years. The speed at which newly legalized farm workers leave the farm work force depends on factors ranging from legalization requirements (do newly legalized workers have to continue working in agriculture), worker characteristics (do workers have the English and contacts needed in many nonfarm jobs), and the unemployment rate (are nonfarm jobs readily available).

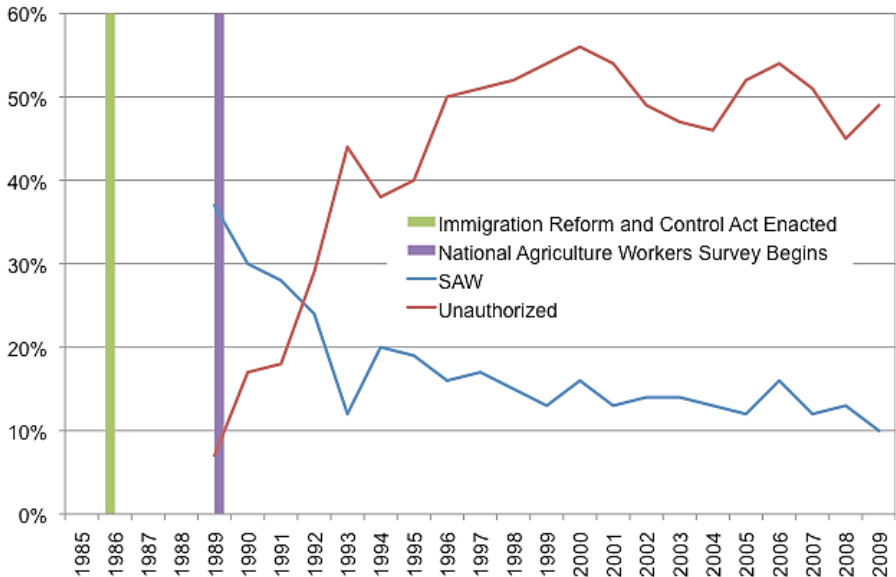
Between 2007 and 2009, almost 30 per cent of crop workers were born in the US and 70 per cent were born abroad, almost always in Mexico. Table 3 shows that foreign-born and US-born workers were similar in many respects. Their average age was 36, and three-fourths were male. About the same share of foreign-born and US-born crop workers had incomes below the poverty line, a third of foreign-born families received some means-tested welfare benefit versus a quarter of US-born families, and very few farm workers were follow-the-crop migrants.

There are also significant differences between foreign-born and US-born crop workers. For example, 55 per cent of the foreign-born workers are unauthorized, only 13 per cent completed high school, and only three per cent speak English well. Foreign-born crop workers are also more likely than US-born crop workers to be married.

¹⁵ Between 1,500 and 3,000 workers a year are interviewed at work with the permission of their employer, a total of 56,000 workers over the past two decades. Two thirds of employers agree to allow their workers to be interviewed, and over 90 per cent of the workers offered \$20 agree to answer NAWS questions.

Foreign-born and US-born crop workers get their first farm jobs in their early 20s, and they had done an average 13 years of farm work when interviewed in the NAWS. However, foreign-born workers are more likely to have been hired by contractors and other intermediaries, 17 per cent versus two per cent; more likely to be working in FVH crops; and more likely to be filling harvest jobs, 52 per cent versus 27 per cent. Almost 40 per cent of US-born workers are employed in field crops such as corn and grains, and over 35 per cent are employed in nurseries.

Figure 1. SAWs and Unauthorized Crop Workers, 1989-2009



US-born workers had average hourly earnings of \$9.74 in 2007-09, almost a \$1 an hour more than the average \$8.89 of foreign-born workers. Foreign-born workers had more days of farm work in the past 12 months, 200 versus 180, and were less likely to have health insurance provided by their current farm employer. A seventh of foreign-born workers, versus a quarter of US-born workers, had employer-provided health insurance in their current job.

Over three-fourths of foreign-born workers, and two-thirds of US-born workers, plan to continue working in agriculture at least five more years. A third of the foreign-born farm workers, versus two-thirds of the US-born, said they think could find a nonfarm job within a month, although these shares may be lower in 2012 because of persisting high unemployment rates in states with large numbers of crop workers such as California.

Table 3 examines two groups of farm workers. SAW-legalized farm workers, including a few workers legalized under the general legalization and Central American programs, fell from 32 per cent to 15 per cent of workers between 1989-91 and 1998-00 before stabilizing at just over 10 per cent of crop

workers. Foreign-born newcomers, defined as workers in the US less than a year before they were interviewed, rose sharply during the 1990s. They were almost a quarter of all crop workers in the late 1990s but less than 10 per cent of workers interviewed between 2007 and 2009.

Table 2. All, US-Born and Foreign-Born Crop Workers¹⁶, 2007-2009

Demographics	All	US-born	Foreign-born
Authorized(%)	52	100	45
Male(%)	78	77	78
Average age(yrs)	36	37	36
HS&more education(%)	28	68	13
Speak English well(%)	30	97	3
Married(%)	59	44	65
Families <poverty income(%)	23	23	23
Families with welfare(%)	30	23	32
Follow-the-crop migrant(%)	6	1	7
Farm work			
Age first farm job(yrs)	23	22	23
Average years of farm work	13	14	12
Directly hired (%)	88	98	83
>10 years current employer(%)	17	20	15
>4 farm employers past year(%)	1	0	1
FVH Crops(%)	78	56	88
Harvest and post-har jobs(%)	45	27	52
Wages, Benefits, Plans			
Average hourly earnings(\$)	9.13	9.74	8.89
Farm days worked, past year	194	180	200
Health insurance, current job(%)	18	26	14
Continue farm work > 5 years(%)	73	66	78
Find nonfarm job <1 month?	44	76	31

Source: NAWIS interviews 2007-2009

SAW-legalized workers are today much older than newcomers; their average age was 49 in 2007-09, versus 25 for newcomers. Three-fourths of the SAW-legalized workers did not migrate, but a quarter returned to Mexico in the past year, usually over the Christmas holidays (almost none followed the crops in the US). Over 90 per cent of newcomer farm workers moved from Mexico to the US in the year before they were interviewed.

Educational levels have been rising in Mexico, which explains why SAW-legalized workers have *less* education than newcomers, an average five versus six years (seven per cent of both groups graduated from high school in 2007-09). However, SAWs in the US since the mid-1980s are much more likely to speak some English and to have incomes above the poverty line. By contrast, almost 95 per cent of newcomers had below-poverty level incomes. A third of newcomers work for labour contractors, versus less than a fourth of SAW-

¹⁶ US-born were 29% of all workers between 2007 and 2009.

legalized workers, including only an eighth during 2007-09. Newcomers had fewer days of farm work in the past year than SAW-legalized workers.

Table 3. Foreign-born Farm Workers, 1989-2009

	SAW-Legalized			Foreign-Born Newcomers		
	1989-91	1998-00	2007-09	1989-91	1998-00	2007-09
Share of workers(%)	32	15	12	4	23	9
Demographics						
Authorized(%)	100	100	100	13	1	1
Male(%)	86	88	84	74	88	88
Average age(yrs)	32	40	49	23	25	25
HS&more education(%)	2	1	2	7	1	1
Speak English well(%)	3	4	2	7	1	1
Married(%)	63	77	87	41	36	34
Families <poverty income(%)		36	12		94	94
Families with welfare(%)	13	31	37	2	2	3
Follow-the-crop migrant(%)	25	13	3	16	14	7
Farm work						
Average years of farm work	8	17	26	1	1	1
Directly hired(%)	76	76	88	58	60	70
FVH Crops(%)	86	87	87	93	77	93
Harvest and post-har. jobs(%)	59	39	45	72	44	51
Wages, Benefits, Plans						
Average hourly earnings(\$)	5.51	6.93	9.82	4.91	5.98	7.87
Federal minimum wage(\$)	3.80	5.15	7.25	3.80	5.15	7.25
Farm days worked, past year	191	193	226	77	76	90
Health insurance, current job(%)		11	26		1	4
Find nonfarm job<1 month?	45	40	37	20	13	12
<i>Source: NAWs interviews 1989-2009</i>						

About 90 per cent of both SAW-legalized and newcomer workers are concentrated in FVH commodities, a pattern that has not changed over the past two decades. The share of both SAW-legalized and newcomer workers filling harvest and post-harvest jobs has been falling, and was half or less in 2007-09.

SAW-legalized workers earned an average 1.5 times the federal minimum wage in 1989-1991, but the SAW premium over the minimum wage fell in subsequent periods. Newcomers earned 30 per cent more than the federal minimum wage during 1989-91, and the newcomer premium fell to 10 per cent above the federal minimum wage during 2007-09.¹⁷ A third of SAW-legalized workers, but only an eighth of newcomers, believe they could find a nonfarm job in a month.

In a hired farm work force that includes perhaps 2.4 million individuals, equivalent to average US employment of janitors and cleaners, farm worker averages can be misleading. For example, almost all foreign-born farm work-

¹⁷ Income is not adjusted for time in the United States. Many newcomers had low incomes because they recently arrived to the U.S., so they had few US earnings during the previous 12 months.

ers were born in Mexico, but Mexican-born US farm workers are increasingly from southern Mexico rather than west-central Mexico where Braceros were recruited.

Some Spanish-speaking west-central Mexicans have become supervisors of newly arrived indigenous workers from southern Mexico who may not speak Spanish well, reflecting the growing complexity of the hired farm work force. Some legal west-central Mexicans continue to circulate between US jobs and homes and Mexican villages of origin, while many of the unauthorized newcomers from southern Mexico stay in the US because of the difficulty of re-entry if they return to Mexico temporarily.

Meatpacking

Meat processing is a nonfarm industry critical to US agriculture. Livestock and products accounted for over half of the \$300 billion in annual farm sales in 2007, and cattle, hogs, and broilers account for two-thirds of livestock sales. Red meat production has been rising, from 46 billion pounds in 2000 to 49 billion pounds in 2010, while poultry meat production rose from 36 billion pounds to 43 billion pounds in the same period.¹⁸ Exports of beef, pork, and poultry rose from 9 billion pounds in 2000 to 14 billion pounds in 2010, while imports fell from 4 billion pounds to 3.4 billion pounds. The US has a significant trade surplus in meat.

From urban to rural

Meat processing has changed in scale and location. There are fewer and larger farms, feedlots, and meat processors, reflecting a general consolidation in US agriculture and manufacturing. Meat production in the 1960s and 1970s shifted from urban areas near the consumers of meat products to rural areas nearer cattle and poultry producers, as from Chicago to Garden City Kansas (MacDonald and Ollinger, 2000).

The share of meat processing employees in non-metro areas¹⁹ rose from less than half in 1980 to 60 per cent by 2000, and many of the newer rural plants are larger than the older urban plants they replaced. Over 85 per cent of the beef, pork, and chicken is from large plants that process at least 500,000 cattle, a million hogs, and several million chickens a year, and most have more than 400 employees. Meat products are usually transported from the plants to supermarkets and other outlets via refrigerated truck.

¹⁸ US meat production in 2003 included 26 billion pounds of beef, 20 billion pounds of pork, and 39 billion pounds of chicken and turkey. Per capita consumption of meat, poultry, and fish in 2003 was 234 pounds, and included half red meat, 43 per cent poultry, and 7 per cent fish.

¹⁹ Non-metro is a residual category for counties that are not defined as metro. There are 3,141 US counties and 2,297 were classified as non-metro by the Office of Management and Budget as of 2002, which means they do not have an urbanized area of 50,000 or more plus surrounding counties linked by commuting patterns, the definition of a metro county.

The shift of meatpacking from urban to rural areas was prompted by several factors, including lower land and labour costs, less stringent environmental restrictions, and easier access to animals. Lower labour costs in rural areas encouraged urban supermarkets paying high wages to butchers to request preparation of meat products at the processing plant, so that boxed, vacuum-packed, and cut-up and sometimes cooked and seasoned meat products are now prepared in processing plants. Retail packages of meat rather than carcasses became the primary output of the plants.²⁰ One summary concluded that meatpacking work is “hard and dangerous, and wages are low by manufacturing standards, although often high compared with alternative employment in the rural communities in which plants are concentrated” (Craypo, 1994: 85).

The meatpacking industry has been expanding, while the fruit and vegetable preserving industry has been shrinking. Cannery wages were traditionally higher than meatpacking wages, reflecting the fact that most plants were in high-wage states such as California and that the work was often seasonal. However, as the characteristics of the labour forces in meatpacking and canneries converge, wage gaps have narrowed. Hourly earnings for production workers in smaller food manufacturing industries, such as oilseed milling, sugar or chocolate manufacturing, and dairy products tend to be higher than in meatpacking, \$15 to \$20 an hour versus \$12 to \$14 an hour.

The meat processing industry has four major segments, animal slaughtering (311611), meat processed from carcasses (311612), rendering and meat byproduct processing (311613), and poultry processing (311615). Poultry processing has about as many employees as meat processing, but meat wages are typically higher than poultry wages because more of the meat plants are in higher wage Midwestern states.

The poultry processing developed later than meatpacking and in the south, but became the first vertically integrated meat industry, meaning that poultry processors supply chicks and feed to farmers who own the buildings and supply the labour to raise the chickens. Almost all US broilers are raised under contracts with processors. The cattle industry is least vertically integrated, in part because it has two distinct segments. Mostly small feeder cattle operations raise calves and sell them to generally larger feedlots that “finish” the cattle. The more concentrated poultry industry has been associated with falling costs and rising consumption of poultry products.²¹

Meatpacking is one of the most dangerous manufacturing jobs in the US, with injuries that include muscular trauma, repetitive motion disease, cuts, and

²⁰ About 39 per cent of all meat sold at retail in 2000 was pre-packaged, or “case-ready,” compared with 23 per cent in 1997 (REF).

²¹ Per capita consumption of chicken first surpassed per capita consumption of pork and beef in the early 1970s, largely because chicken producers were able to reduce costs and prices dramatically. It takes 10 pounds of feed and 11 weeks to produce a five-pound broiler, and chickens have become so uniform in size that consumers know what to expect with each purchase.

strains. The Bureau of Labor Statistics (www.bls.gov/iif) conducts an annual survey of workplace injuries and reports an incidence rate by industry, the number of injuries and illnesses reported per 100 full-time equivalent workers. In 2010, some 3.1 million nonfatal workplace injuries and illnesses were reported by private industry employers, an incidence rate of 3.5 cases per 100 equivalent full-time workers. The rate was 4.4 for manufacturing, 5.8 for food manufacturing, and over 10 in animal slaughtering and processing.

Historically, most meatpacking workers outside the southern states were represented by unions that had master agreements with the largest packers. Union strength peaked in 1968, when over 90 per cent of meat production workers belonged to unions and the average meatpacking wage of \$3.45 an hour was 15 per cent above the average manufacturing wage of \$3 an hour (Craypo, 1994:71). During the 1980s, many of the unionized plants in urban areas closed amidst a wave of strikes.²² By 1986, average meatpacking wages of \$8.24 an hour were 18 per cent below the average manufacturing wage of \$9.75. Meatpacking wages continued to fall, and by 1990 the \$8.73 an hour wage was 24 per cent below the \$10.85 average manufacturing wage (Craypo, 1994:71).²³

Migrants and enforcement

Meat-packing has long attracted workers with relatively little education and sometimes little English, but meatpacking wages were comparable to those of other manufacturing industries when meat processors were in urban areas. Few meatpacking workers followed plants from urban to rural areas, so when the industry moved, it had to find a new work force.

Meat processing facilities in rural areas generally do not have to compete with other factories for workers, and often recruit workers from out of the area, especially to staff second or night shifts. Refugee resettlement in the 1970s and 1980s brought Asians to the Midwest, and the 1986 Immigration Reform and Control Act facilitated the geographic and occupational mobility of newly legalized Mexicans, many of whom saw moving from seasonal farm to year-round meat processing jobs as a step up the US job ladder.²⁴

There is little systematic data on employer preferences for particular types of workers. Poultry plant managers in the late 1980s told interviewers that Asians and Hispanics had a “better work ethic” than local Blacks and whites;

²² There were 158 strikes in meatpacking involving 40,000 workers between 1983 and 1986.

²³ USDA estimated that large hog plants paid 10 to 12 per cent higher wages than smaller plants in the early 1980s. About 90 per cent of US meat and poultry is from plants that have 400 or more employees.

²⁴ The Los Angeles Times on February 16, 2004 profiled six brothers from Los Cerritos, Michoacan who migrated to Oxnard, California to pick strawberries in the 1970s and 1980s, and in 1993 began to move to Rogers, Arkansas to work for Tyson Foods. They noted that their earnings rose from \$8,000 a year picking strawberries to \$20,000 a year in the plants, their wives could also work, and low-cost housing enabled them to become homeowners (Kelley and Chavez, 2004).

Griffith also noted that economic growth offered local workers other job opportunities, encouraging many to quit meatpacking jobs. Many immigrant workers moved to fill meatpacking jobs on their own, but some plants offered cash bonuses of several hundred dollars to current workers and others who referred persons who stayed on the job 60 or 90 days.²⁵ Networks evolved to bring US-born as well as Mexican-born Hispanic workers from south Texas and other areas with high unemployment rates to midwestern meatpacking plants.

Once a core group of Asians or Hispanics is employed in a plant, network hiring can take over recruitment, with current workers bringing friends and relatives to fill vacant jobs (Griffith, 1988:35).²⁶ Network hiring shifts most recruitment costs to currently employed workers, who bring only those who can do the work and often act as the mentors of newly hired workers. Critics of the meat packing industry allege that network hiring gives managers more control of workers, as some managers allegedly threaten to fire an entire crew if there are problems with one worker. Some plants provide company housing, so that losing a job also means losing housing.

Meatpacking drew the attention of immigration law enforcers in the mid-west during the late 1990s, when an estimated 25 per cent of meatpacking workers were unauthorized. Operation Vanguard subpoenaed employment records from meatpacking plants, compared information provided by newly hired workers on I-9 forms with government databases, and instructed employers to ask employees who appeared to be unauthorized to clear up discrepancies in their records before INS agents came to the plant to interview them. When informed of INS suspicions that they were unauthorized, most of the suspect workers quit.

Vanguard was attacked by meatpackers, farmers, unions and Hispanic groups, prompting the INS headquarters to order its suspension in 2000. The subsequent lack of enforcement contributed to the jump in the Hispanic share of employment in meatpacking between 2000 and 2005. However, beginning in 2006, meatpacking plants were often targeted in raids seeking unauthorized workers. The Immigration and Customs Enforcement agency used 1,000 agents to inspect workers at six plants owned by Swift on December 12, 2006,

²⁵ If companies directly recruit out-of-state workers, they may be liable for return transportation for workers who quit. For example, under Nebraska law, companies with at least 10 per cent non-English-speaking workers must report any recruitment of those workers from more than 500 miles away and must pay their travel expenses to the work place. If the out-of-area workers quit within two weeks, the company must pay their travel expenses back to the place of recruitment.

²⁶ Griffith reported that over three-quarters of poultry processing plant managers in North Georgia, North Carolina, and Delmarva in 1988 thought it would be more difficult to recruit workers after immigration reform in 1986, but only a quarter of the managers in Texas and Arkansas anticipated future recruitment problems (1988: 40). Griffith emphasized the importance of local economic conditions in the ease of recruitment, noting that North Georgia plants had more trouble attracting and retaining workers because of booming nearby Atlanta than plants in Texas and Arkansas (1988: 43-45).

arresting almost 1,300 of the 7,000 workers employed on the day shift in these plants, 20 per cent. Crider Inc., a poultry processor in Stillmore, Georgia, lost three-fourths of its 900-strong work force when ICE agents mounted a raid on Labour Day weekend in 2006. In the aftermath of the raids, many meat-packers enrolled in E-Verify, the voluntary internet-based database that allows employers to check the legal status of newly hired workers.

The result was a reversal of the growing share of Hispanics in meatpacking between 2005 and 2010. EEOC data report the sex, race and ethnicity of employees in most US establishments and show that the share of Hispanic workers in food manufacturing and meat packing rose rapidly between 2000 and 2005 but fell between 2005 and 2010. In 2000, Hispanics were 38 per cent of all employees in animal slaughtering and 48 per cent of animal slaughtering labourers. The Hispanic share of animal slaughtering workers rose by almost 10 percentage points between 2000 and 2005, and then fell to 2000 levels or below by 2010.

Reasons for the rising share of Hispanics among labourers in meat packing include network hiring and recruitment during periods of low unemployment. Reasons for the falling share of Hispanics since 2005 include well publicized workplace raids in 2006-07 and I-9 audits since, the 2008-09 recession that increased unemployment and made year-round meatpacking jobs that often pay \$12 an hour more attractive, and more employers enrolling in E-Verify, which may discourage unauthorized workers from applying for jobs.

The changing ethnicity and legal status of meatpacking workers may have contributed to unionisation. Smithfield Packing's 5,000 employee plant in Tar Heel, North Carolina, which processes 32,000 hogs a day, was the target of a union organizing effort mounted by United Food and Commercial Workers Local 1208. The plant opened in 1992, and the UFCW lost elections there in 1994 and 1997 before winning an election on a 52-48 per cent vote in December 2008. Some attributed the UFCW's win to the changed workforce, which came about when a UFCW "Justice at Smithfield" campaign in 2006 resulted in a re-screening of employees for legal status. Hispanic workers who left were often replaced by Blacks, whose share of plant workers rose from 20 per cent in 2006 to 60 per cent in 2008.

Community impacts

The arrival of Hispanic workers can quickly change the face of rural areas that sometimes have not experienced significant immigration for a century. The new residents have been welcomed in most areas, especially those losing people and jobs. Hispanic immigrant meatpacking workers buy homes and shop at local markets, helping to stabilize local economies.

However, there are also new tensions with demographic change. Many local residents complain about the side effects of the changing labour force, including more students with limited English proficiency in local schools and more uninsured patients seeking health care at local clinics and emergency

rooms. Many meat processing plants provide health insurance and other benefits after 60 or 120 days of employment but, with high turnover, a significant share of the workers in a particular plant may not have health insurance.

Two extremes mark the reactions of meat processors to these externalities. Many recognize that they are hiring workers with little English and formal schooling, and some have formed partnerships with local community colleges and high schools to offer classes in English, finance and other life skills to their workers. For example, Tyson Foods has an education assistance plan that reimburses 75 per cent of the cost of tuition, books and fees (up to \$3,500 a year) for course work that helps to meet the company's business needs.²⁷ In Grand Island, Nebraska, Swift & Co. built a two-classroom school near its plant in 2002 so workers could attend high school classes before and after their work shifts; the local school district provided a teacher and a teacher's aide.

The other end of the spectrum is marked by processors who say that their major economic contribution is the facility they provide for local farmers and the payroll they provide to local workers. Meatpackers who do not make impact payments, sponsor sports events, and meet with community leaders may contribute to the backlash against immigration in some communities, prompting some cities and counties to vote against zoning or other changes needed to open or re-open meat processing facilities.

Conclusions

Ever larger and more sophisticated US fruit and vegetable farms depend on ever less educated Mexican-born workers, widening the gap between farm operators and farm workers. The fact that many hired workers are brought to farms by intermediaries and supervised by a variety of middlemen who may not speak English well enlarges gaps between workers and the beneficiaries of their work.

Most farm employers say that migrant workers are necessary for the indefinite future, and that if there are fewer available in Mexico, farmers will turn to Central America or Asia for workers. There are efforts to combine biological and mechanical innovations so that fewer and better educated workers produce what are now labour-intensive crops, but these efforts have not been intense over the past quarter century because hired workers have been readily available.

If farm labour costs were to rise, history suggests that the flexibility in production agriculture is likely to lie on the demand rather than the supply side of the labour market. This means that, if wages were to rise 20 or 30 per cent, it is more likely that farmers would respond by reducing the demand for farm workers via labour-saving innovations rather than induce more US

²⁷ "Meatpacking industry providing education to workers." AP. June 10, 2005.

workers into the fields. Some commodities that defy mechanization would likely be imported, as with fresh asparagus and green onions.

US agriculture is a case of migrant workers improving competitiveness in the short run by holding down wages and reducing competitiveness in the long run as lower labour costs discourage productivity improvements. In a globalizing world, what many farmers feel is necessary in the short term could be harmful to US agriculture in the long run.

In contrast to production agriculture, the availability of migrant workers may have hastened productivity improvements in meatpacking as it shifted from smaller urban to larger rural plants. Newer facilities nearer to animals were often in places with few people, so that the availability of migrants arguably helped to spur productivity growth and competitiveness.

Meatpacking wages dropped as the industry moved from urban to rural areas, and were stagnant despite the fact that workers were represented by unions in many plants. However, enforcement in 2005–06 reversed the share of Hispanics in meatpacking and encouraged many meatpackers to enrol in E-Verify, the federal internet-based system that allows employers to check the legal status of new hires. A combination of enforcement, recession, and higher wages reversed the rising share of migrants in the more modern meatpacking industry.

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