

**The Lobby That Cried Wolf:
Restrictive Immigration Reform Does Cost
the American Agricultural Industry**

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por los inmigrantes

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Abstract

This thesis examines the effects of the Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA) on the American agricultural industry. This industry prospered throughout the 20th century regardless of favorable immigration reform. IIRIRA contained a particularly strong combination of border security and workplace provisions which posed the most serious policy threat yet to the industry's immigrant labor supply. However, the history of American immigration policy suggests that the legislation would not be sufficiently implemented to achieve its intended effects. Interrupted time series analysis of farm worker employment data demonstrates a sharp increase in wage and hours per week growth after the implementation of IIRIRA. Mexican migrant data corroborates the hypothesized IIRIRA influence by demonstrating a shift out of agricultural occupations and away from traditional state destinations. Additional specifications do not support alternative explanations based on changes in minimum wage or welfare legislation. Thus, all evidence strongly suggests that IIRIRA is the first piece of American immigration legislation with adverse consequences for the U.S. agricultural industry.

*“We are short of labor. The real fact is we have not any labor.”*¹

Fred Roberts
President, South Texas Cotton Growers’ Association
Congressional Testimony
January 27, 1920

I. Introduction

The Illegal Immigration Reform and Immigrant Responsibility Act of 1996 (IIRIRA) is a significant and oft-overlooked recent chapter in the U.S. history of farm lobby advocacy for immigration reform. Since the 1920s, farm lobbyists have often successfully persuaded Congress to pass legislation protecting the agricultural industry’s immigrant labor supply. Even when the lobby “lost” in legislative terms, the industry consistently fared well by relying on both legal and undocumented immigrant workers. However, the combination of border security and workplace enforcement provisions found in IIRIRA made this law a particularly potent threat to the industry, the effects of which have yet to be studied.

The background, Section II, begins by identifying trends in farm lobby advocacy, Congressional responses, and agricultural industry outcomes during 20th century immigration reform. In the case of IIRIRA, although the lobby’s approach and Congress’s response are documented, the effects of the law on the agricultural industry are not. By uncovering the full picture for IIRIRA, we can best understand how the farm lobby will approach future enforcement-heavy immigration reform proposals. In addition, we can project how the agricultural industry will fare if one such reform passes.

This study of IIRIRA also contributes to new destinations theory. Immigrants have been shifting from traditional destinations, such as California, to new destinations, such as North

¹ “Admission of Mexican Agricultural Laborers” 1920, p. 3.

Carolina, for the last several decades, but the literature notes that this trend rapidly accelerated in the 1990s. The causes of this sudden shift are ambiguous, though most likely attributable in part to sharply increasing border security (Massey and Capoferro 2008). IIRIRA is responsible for some of the border security provisions implemented in the 1990s as well as for increasing workplace enforcement. Whereas border security could redirect potential undocumented immigrants to new destinations, workplace enforcement is more likely to prompt undocumented immigrants already in the United States to seek employment in states where IIRIRA enforcement is less likely. In addition to—or instead of—IIRIRA, minimum wage policies and/or welfare reform could also have prompted immigrants to seek new destinations in the 1990s. The effects of these alternative explanations must be distinguished from those of IIRIRA.

Section III explains methods of determining IIRIRA’s effects on farm workers, which bear directly on the agricultural industry via its labor supply. I also identify methods for distinguishing the effects of IIRIRA from other concurrent influences on immigrants. Sections IV and V introduce and discuss the results, and Section VI concludes.

II. Background

II.A. The Roots of Agricultural Dependence on Immigrants

American agricultural industry² emerged from the 19th century with a sharecropping system in the South and family-based farming in the Midwest. Although some ethnicities of immigrants began farming cheap Western land and the South unsuccessfully attempted to attract immigrants into field work, most immigrants in the early 1900s concentrated in urban Northern

² See Section III.A for the scope of the term “agricultural industry” as pertains to the question at hand. Here a generalization suffices.

settings where they found industrial jobs (Goldin 1994, p. 235, 240-2; Jones 1992, p. 179-85). According to Collins (1997), the industrial preference for immigrant labor long delayed the movement of blacks out of Southern sharecropping into better jobs in Northern industry. Not until first World War I and then the 1920s immigration quotas restricted the traditional industrial supply of labor did blacks' Great Migration begin (1997, p. 617, 625; cf. Goldin 1994, p. 235-6).³ In turn, the exodus of a large portion of the traditional supply of Southern agricultural labor beginning in the 1920s would pave the way for a slow transition to immigrant agricultural employment in the South.

Meanwhile, a very different immigrant occupational pattern developed in the Southwest from the turn of the century. Mexican immigrants developed into "the backbone of the Southwest's labor force" due to the high demands of agricultural industry there and Mexicans' willingness to follow the seasonal crops for low wages (Jones 1992, p. 249-50). This toehold in the Southwest formed the basis for the agricultural industry's growing reliance on Mexican immigrant labor over the 20th century and into far-reaching parts of the United States.

II.B. Often Successful Lobby, Always Successful Industry

As agricultural industries came to rely on immigrants, they began to seek Congressional protection for their labor supply through favorable immigration legislation. Congressional hearings throughout the 20th century illustrate the farm lobby's repeated cry for labor with each successive round of immigration reform proposals. Frequently, the lobby succeeded in obtaining legislation clearly favorable to its cause. At other times, the lobby seemed to lose or at least compromise, but history tells of the agricultural industry's success regardless.

³ See Collins (1997) for further proof of the "immigrant-as-deterrent" theory.

In the late 1910s and early 1920s, farm lobby representatives advocated for exemptions from immigration restrictions for the Mexican workers on whom they had come to rely. Fred Roberts, a farmer and president of the South Texas Cotton Growers' Association, was one of these industry representatives who testified to the Senate Committee on Immigration, saying, "We are short of labor. The real fact is we have not any labor" ("Admission of Mexican Agricultural Laborers" 1920, p. 3). In a textbook example of the farm lobby's recurring hyperbole, these two sentences subtly contradict each other: being short of labor is very different from having no labor whatsoever. Roberts nevertheless provides a plausible explanation for his plea: cotton growers in that part of the country have always relied to a large extent on Mexicans; they are no longer able to obtain black workers who have left Texas and Louisiana to seek Northern industrial jobs; and returning soldiers do not want agricultural jobs because they have no pre-war experience in that area (1920, p. 3-4, 9).

A number of other farm industry representatives also testified at Congressional hearings in 1920 and 1923,⁴ though it is unclear whether they should attribute their ultimate success to their testimonies or their friends in high places. One Senator Sheppard is particularly candid with his sympathy for Roberts, the farm lobby witness. Referring to temporary exemptions from the head tax and literacy test for Mexican workers during World War I labor shortages, Sheppard indicates that "we have exhausted all the arguments at our command to have the Department of Labor suspend the laws further, but they say they can not, that the war emergency is over" ("Admission" 1920, *sic*, p. 5-6; Martin 1998, p. 878).

Whatever the mechanism of its influence, the lobby earned a great victory when the Immigration Act of 1924 exempted the Western Hemisphere from quotas applicable to

⁴ See "Amendment to Immigration Law" (1923) for another relevant example.

immigrants of many other national origins (Jones 1992, p. 248; Martin 1998, p. 879).⁵ The influx of Mexican labor soon ebbed with the Great Depression, during which Dust Bowl migrants filled many California jobs, but World War II redirected American unemployment into wartime occupations and left the agricultural industry again asking for immigrant labor (Martin 1998, p. 979-80; García y Griego 1998, p. 1216-7). From this perspective, the resulting Bracero guestworker program might not seem undeserved, though labor reformers were outraged that an industry which consistently treated its labor poorly should once again win concessions to its false portrayal of labor shortages (Martin 1998, p. 880).

The farm lobby managed to win repeated extensions of the Bracero Program using a more complex version of the same basic labor shortage argument it applied in the early 1920s. In anticipation of the expiration of the Bracero Program on December 31, 1947, John C. McGovern, Chairman of the National Farm Labor Conference, testified before the House Committee on Agriculture that “for some reason or other our domestic workers will not go out and do this ‘stoop’ labor,” even when otherwise unemployed (“Foreign Agricultural Labor” 1948, p. 2, 8). Furthermore, he claimed that Mexican Americans who were formerly constrained to agricultural labor for lack of other options have now found jobs in other industries, and the “farm boys” have gotten caught up in urban migration (1948, p. 8-9). Others were not so absolute on the scarcity of domestic labor. In 1948, Robert Shields, Executive Vice President and General Counsel of the U.S. Beet Sugar Association, told the Agricultural Committee that the bill would be a wise “safety valve” for the fall harvest: “in some beet areas none of this foreign labor has been required....[though] in other areas it has been...and it has been very

⁵ Although these sources differ on the degree to which they attribute this exemption to the activities of farm lobbyists, this explanation corroborates the statements of lobbyists and their sympathizers at Congressional hearings during this period.

difficult to procure under the present program” (“Farm Labor” 1948, p. 24). The farm lobby thus sent a mixed message about the degree of its “need” for Mexican labor.

Industry representatives nevertheless proposed their preferred plan for maintaining access to Bracero workers if and when they should be required. McGovern argued for a new system under which members of employer associations would share the costs of transporting Mexican workers but the U.S. Government would cover some costs, like recruitment in Mexico, and waive others, like the head tax (1948, p. 4). The lobby ultimately won an extension of the program under which employers assumed transportation costs and in exchange the government reduced oversight, allowing employers to undercut minimum wage laws and other labor conditions with impunity (Martin 1998, p. 881). For the next fifteen years, Bracero workers fuelled significant expansion in southwestern crop production in conjunction with innovations such as mass irrigation and the new national highway system (Martin 1998, p. 885).

In not all cases was the farm lobby successful, however. Throughout the Bracero period, the program was continually revised, in large part due to tenuous U.S.-Mexico relations, and sometimes the agricultural industry actively but unsuccessfully opposed these revisions. Many employers thus resorted to undocumented Mexican immigrants, spurring an unauthorized migration flow which would not be subject to labor restrictions (García y Griego 1998, p. 1217-8). Here, even if the lobby did not achieve outright success, the agricultural industry continued to prosper.

The eventual lapse of the Bracero Program strongly illustrates the agricultural industry’s ability to persist in spite of its lobby’s alarmist rhetoric and occasional legislative losses. By the 1960s, although the lobby continued to insist on Bracero labor, widespread mechanization, coupled with the availability of some Asian workers, reduced the industry’s actual need for this

labor supply (Martin 1998, p. 885-6; cf. García y Griego 1998, p. 1219-20). In a 1963 hearing before the Subcommittee on Equipment, Supplies, and Manpower of the House Committee on Agriculture, William M. Carson, Director of the National Beet Growers Federation proudly announced his industry's significant progress towards total mechanization over the past fifteen years. However, he continued to justify the Bracero Program:

[W]e still do need labor, and the need for what we do use is still just as great – just as necessary for producing the crop – as when we used a much larger number of workers. The reduction in numbers hasn't reduced the need.

(“Mexican Farm Labor Program” 1963, p. 126)

Carson now needed foreign labor to fill a greater proportion of the remaining need due to a steep drop in the availability of domestic labor, a trend which had even outpaced mechanization (1963, p. 126).

This sudden need is somewhat puzzling in light of the pattern of employer complaints since the beginning of the farm lobby's Congressional advocacy on immigration reform. Fred Roberts in the 1920s and John McGovern in the 1940s each articulated his inability to recruit domestic labor. It is true that the variety of crop industries which the farm lobby represents have different needs at different times. Regardless, employers' persistent complaints about a lack of domestic labor raise doubt, particularly in light of agricultural industry opponents who long denied such claims. Carson's indication of a previous availability which has since dried up throws further doubt on the timeline and scope of employer “need” for Bracero, as discussed above. Martin (1998) gives some support to Carson by noting the rapid increase in factory wages relative to farm wages in the 1950s, contributing to the movement of domestic workers out of agriculture (1998, p. 885). Yet, factory jobs had long been alluring to domestic workers as part of a long-term rural-urban migration trend. All this is to say that the farm lobby's dubious

claims raised the burden of proof both for the lobby's listeners at the time and for the contemporary student.

With the end of the Bracero Program in 1964, agricultural industry continued to fare well through primarily illicit means. The industry's attempts to make greater use of H-2 visas, or "greencards," made available by the 1952 Immigration and Nationality Act (INA), met with stiff resistance from the Department of Labor (Martin 1998, p. 886-7). Instead, the industry came to rely on undocumented Mexican migration through the late 1980s due to a combination of high hurdles for H-2 visas and the new restrictions on total Mexican migration imposed by the 1965 Hart-Celler Act, the latest amendment to the INA (Cerrutti and Massey 2004, p. 18-9; Martin 1998, p. 887-8). Mass mechanization and plentiful undocumented migration were the probable drivers of the agricultural industry prosperity observed in this period (cf. Martin 1998, p. 888, 893).

II.C. IRCA: Embodiment of the Historical Pattern

By this point, a patterned interaction between farm lobby advocacy, Congressional reactions, and agricultural industry outcomes begins to emerge. Circumstances surrounding the Immigration Reform and Control Act (IRCA) of 1986 bear all the markers of this pattern in perhaps its most sophisticated manifestation yet. Considering that the very impetus for the law was the sense that undocumented immigration was out of control, the concessions the farm lobby ultimately won were particularly impressive and ironic (cf. Martin 1998a, p. 87).

In the first illustration of IRCA's conformity to this pattern, the farm lobby once again expressed its concern for a secure labor supply, this time with added acknowledgement of several mitigating factors for its concern. In a 1985 hearing before the Subcommittee on

Immigration and Refugee Policy of the Senate Committee on the Judiciary, Henry Voss, President of the California Farm Bureau Federation, put it this way:

Our main concern is the loss of available seasonal workers on farms and ranches, should the sanction provision of this legislation be passed over our objections and prove to be as effective as the sponsors hope it will be.

(“Immigration Reform and Control Act of 1985” 1985, p. 174)

On behalf of a large number of agricultural employers, Voss verbalized two big caveats which previous lobbyists had left unsaid, namely, that the lobby is a force to be reckoned with and that each iteration of immigration reform has yet to resolve unauthorized migration. He seemingly presumes that the IRCA will not be implemented effectively either.

Three of Voss’s specific concerns are pertinent for their legislative and migration repercussions. First, he claimed that the industry would need legal lag time in which to adjust to this crackdown on undocumented immigrant labor before employers faced sanctions (“Immigration Reform” 1985, p. 174). Second, it is “the right of owners of open fields to require the [Immigration and Naturalization Service (INS)] to obtain a search warrant before entering such places of employment in search of undocumented workers,” as “an issue of simple equity and justice” in light of a comparable requirement for factories (1985, p. 175). Finally, Voss continued characteristic farm lobby advocacy by requesting something akin to the proposed Panetta-Morrison Amendment to the IRCA bill (1985, p. 174). This amendment would create a new guestworker program for seasonal laborers who would be limited to farm work but not to any particular employer⁶ (Martin 1998a, p. 87; Pear 1984). While Panetta-Morrison supporters said that such a provision was necessary to do the work formerly performed by the

⁶ The tie to a single employer was one of the major pitfalls of the Bracero Program from the perspective of workers’ rights.

undocumented, opponents said that another guestworker program would undermine the goal of controlling immigration (1998a, p. 87; Pear 1984).

Congress too reacted as immigration reform history would have predicted. The lobby's allies took it into their own hands to ensure that IRCA protected the interests of the agricultural industry. Representative Leon Panetta and Senator Pete Wilson deserve special recognition for their advocacy on behalf of the industry, particularly by pushing guestworker amendments in their respective chambers (Martin 1998a, p. 87-8). The final piece of legislation addressed all three of Voss's aforementioned concerns by providing lag time for the implementation of sanctions; requiring an INS search warrant; and including flexible guestworker opportunities in the form of a Special Agricultural Worker (SAW) program, Replenishment Agricultural Worker (RAW) program, and H-2A revision to the H-2 program (1998a, p. 88-94; *Immigration Reform and Control Act of 1986*).

Given the lobby's success in winning generous concessions, the agricultural industry should have fared well under IRCA implementation even if the unfavorable portions of the legislation *were* enforced. The effect of IRCA on undocumented migration flows is well documented (cf. Martin 1994, 1998a, 2002; Cornelius 2001; Espenshade, Baraka, and Huber 1997). Through a combination of poor and absent enforcement, false SAW authorizations proliferated, and the agricultural industry had more than enough undocumented, or more precisely, 'falsely documented' workers in the labor pool (Martin 1998a, p. 94). Furthermore, the industry had anticipated that IRCA's primary legalization program, which applied to non-agricultural workers as well, would enable newly-legalized agricultural workers to leave the industry for better employment elsewhere, but that result did not materialize (Tran and Perloff 2002). On the contrary, Tran and Perloff (2002) find that "IRCA increased the long-run

probability that people granted amnesty stayed in agriculture” (2002, p. 437). Finally, the RAW program was never even activated because the federal government did not determine that seasonal labor supply was insufficient to meet demand (Martin 1998a, p. 93; 1994, p. 51). The literature does not mention that the lobby protested as a result, nor should we expect any complaint given the ready availability of SAW and false SAW workers. In short, the industry did not face its anticipated labor shortages, as much legislative concessions as to poor enforcement.

In this review of the farm lobby’s role in 20th century immigration reform, I critiqued the lobby’s incessant calls to protect the labor supply. To the credit of the agricultural industry in general, labor supply did not change uniformly across constituent crop industries or across growing regions in the U.S. However, the farm lobby’s similar cries for a secure labor supply persisted across decades in different contexts with such consistent, if diverse, success. The farm lobby thus represents a resilient industry which has been empirically impervious to adverse immigration policy interventions, at least through IRCA.

II.D. IIRIRA: The Farm Lobby’s Approach

Leading up to IIRIRA, the farm lobby reiterated the basic claims made in previous Congressional testimonies with some tactical revisions under IRCA’s influence. The fact that a president of the California Farm Bureau Federation testified prior to IRCA *and* IIRIRA strengthens the continuity of this comparison. At a 1995 hearing before the Subcommittee on Immigration and Claims of the House Committee on the Judiciary, President Bob Vice echoed his predecessor, Henry Voss, by predicting that, “if enacted, [this bill] will have a significant effect on the availability of agriculture labor in the United States” (“Guest Worker Programs”

1996, p. 75). As a result, Vice, like Voss, requested that Congress include a guestworker provision in the legislation as “a safety valve program for agriculture” which would “insure [that] the workers are admitted in a timely manner when agriculture when agriculture labor needs are critical” (1996, p. 76). Henry Voss had previously explained that these “critical” labor needs applied to short-season perishable crops, for which a Panetta-Morrison type of guestworker program would be appropriate (“Immigration Reform” 1985, p. 174).

Voss and Vice nevertheless approached Congress with different presumptions about the effectiveness of immigration reform. As discussed above, Voss implied his doubt that IRCA’s employer sanctions would be implemented effectively, which abetted his argument for improvements to the bill. Vice instead explicitly assumed that IIRIRA would be implemented effectively: “We assume that the [electronic verification] system that you have proposed in H.R. 2202 will work” (“Guest Worker Programs” 1996, p. 76). Vice’s presumption also advanced his argument, this time against the bill, on the grounds that it would strip the industry of its labor supply unless a guestworker provision were added in advance.

Several of Vice’s arguments against the pending bill also echoed Voss’s portrayal of the character of farm employers. In 1985, Voss advocated on behalf of those employers, indeed “perhaps some three-fourths of the 850,000 agricultural employers in the country,” who “have never employed an undocumented worker and have no intention of doing so” (“Immigration Reform” 1985, p. 174). It is only right that reform to immigration documentation and recordkeeping help these farmers “maintain their presumption of innocence” (1985, p. 175). In 1995, Vice lamented the “catch-22” inherent in IRCA’s combination of employer sanctions and antidiscrimination provisions: “scrutinize employment documents carefully or face severe penalties....[but] scrutinize employment records too carefully and face severe penalties” (“Guest

Worker Programs” 1996, p. 75). In the most poignant pathos expressed by either of the two presidents, Vice concludes his discussion on the catch-22 by lamenting, “The road to a proper compliance is an anxiety-laden ride for the small family business” (1996, p. 75).

It is beyond the scope of this paper to determine whether the small family business actually upholds its duty so admirably, or whether large family businesses (or non-family businesses) face any anxiety whatsoever on this issue. Regardless of these questions, Vice’s statements themselves do provoke doubt about farm lobby intentions independently of any presumptions made by a reader familiar with the pattern of farm lobby advocacy in the 20th century. Following his catch-22 description, Vice pinned all blame for undocumented employment on the workers themselves (1996, p. 75-6). He in turn went to great lengths to exonerate farmers of any suspicion: “Let me be clear, though. Farmers are not ignoring the law” (1996, p. 75). In the context of farm lobby history, such a statement is about as self-incriminatory as Richard Nixon’s famous statement, “I am not a crook.”

II.E. IIRIRA: The Legislative Result

On its face, the immigration bill which Congress passed in 1996 would have an ambiguous effect on the agricultural industry. The final version of IIRIRA did not contain a guestworker program, indicating that the farm lobby did not prevail on one of its most important agenda items. Among other adverse consequences for the agricultural industry, Title I of IIRIRA directed significant new resources to border security in the form of 5,000 new Border Patrol agents; up to 1,500 new INS support personnel on the border; 900 new INS support personnel investigating alien smuggling and employer sanctions violations; authorization for new patrolling equipment and surveillance technology; and \$12 million for triple fencing along the San Diego-

Tijuana border (Osuna 1997a; Espenshade, Baraka, and Huber 1997, p. 776; H.R. Rep. No. 104-828, 1996, p. 7-13). These new Border Patrol agents would double the existing staff of 5,000 agents by fiscal year 2001 (Osuna 1997a, p. 14-1). This steep increase in border security could prevent a greater proportion of undocumented Mexicans from entering the agricultural labor supply, adversely affecting the industry. Although such a result hinges on effective implementation, as the farm lobby knows quite well, IIRIRA at least contained the substance of a significant threat to the industry. The introduction of new INS support personnel dedicated to investigating workplace enforcement could also cause the industry concern.

At the same time, a number of provisions related to workplace enforcement should have reduced the agricultural industry's concern about IIRIRA. Congress seemingly heeded California Farm Bureau Federation Presidents Voss and Vice by giving agricultural employers the benefit of the doubt. As one indication, Title IV of IIRIRA introduced electronic employment verification programs in pilot versions limited to a few states (H.R. Rep. No. 104-828, 1996, p. 112-26). Voluntary election to participate in one of these pilots would create a 'rebuttable presumption' for employers later caught with undocumented employees (Osuna 1997b, p. 8-8). In other words, prosecution would require a high burden of proof that a violating employer had *not* made a 'good faith' effort to uphold the law (Fragomen 1997, p. 442; Osuna 1997b, p. 8-2 - 8-3). The voluntary nature and limited range of these pilot programs should have significantly reassured employers, in part because the INS would likely grant slack to those who chose to participate (Osuna 1997b, p. 8-8).

In addition, Congress apparently honored Vice's request by requiring that discrimination charges prove an employer's 'intent' to discriminate (Fragomen 1997, p. 442; Osuna 1997b, p. 8-

4). This provision resolves Vice's "catch-22," leaving agricultural employers free to check workers' documents without threat of being charged with overdoing it (Osuna 1997b, p. 8-8).

The agricultural industry could also benefit from at least one IIRIRA provision for which neither Vice nor his predecessor Voss advocated in his testimony. The law increased the standard visa length from four to six months (H.R. Rep. No. 104-828, 1996, p. 173). This extension expanded the duration for which employers could rely on their legal immigrant workers and delayed their reliance on workers who have overstayed visas.

II.F. IIRIRA: The Unsolved Case

IIRIRA is particularly relevant to understanding the relationship between farm lobby advocacy, Congressional reactions, and agricultural industry outcomes for several reasons. First, IIRIRA focuses to a greater extent on both border security and workplace enforcement than any other extant piece of immigration reform legislation. Together, if implemented as written, these two factors could have particularly critical effects on the agricultural industry's labor supply. Among other recent immigration reforms, IRCA focuses on employer sanctions, which were not well enforced, though it also increases appropriations for the INS in order to increase border patrol personnel ("Immigration Reform and Control Act of 1986" 1986, p. 25). The Immigration Act of 1990 addressed undocumented immigration by adjusting legal immigration quantities without affecting border security or workplace enforcement.⁷ Finally, the subsequent Secure Fences Act of 2006 focuses on border security provisions, and it is too recent for the available data anyway. Thus, study of IIRIRA should yield insights which uniquely generalize to future

⁷ See Briggs (1991) and Cerrutti and Massey (2004) for discussion of this other oft-overlooked recent immigration law.

immigration reform proposals which involve both workplace enforcement and border security provisions, a likely combination for some political temperaments.

Second, the literature pays little attention to this unique piece of legislation and no attention to its effects on agricultural industry. Among the few examples of the former, Espenshade, Baraka, and Huber (1997) speculate about the effects of IIRIRA on undocumented migration flows, but their analysis comes too soon after the law's implementation to capture any outcomes, let alone those on agricultural industry. Cornelius (2001) claims that 1990s border security policies were likely unsuccessful in deterring undocumented immigration. However, data on INS apprehensions do not accurately capture overall migration trends, making Cornelius's conclusion tentative at best (2001, esp. p. 664-6). He also cites research indicating that there was no effect of 1990s border security policies in general on the supply of agricultural workers and on their wage rates (2001, p. 676-7). However, Cornelius makes no mention of IIRIRA—he focuses instead on INS policy changes and, to a lesser extent, on IRCA. Finally, Wasem (2009) comments on IIRIRA specifically. Yet, in the context of a Congressional Research Service (CRS) report, she does little more than cite Cornelius (2001) and another CRS report on apprehensions trends, a metric which Cornelius has already discredited.

Despite the dearth of literature on IIRIRA's specific effects, immigration enforcement trends are well-documented. IIRIRA's provisions went into effect beginning in fiscal year 1997. By 2001, the Border Patrol had nearly doubled the 5 million hours its agents spent monitoring the border in 1997 (Hanson 2006, p. 884-5), a steep increase which reflects IIRIRA's generous allocation of new Border Patrol agents. During the same period, these hours shifted away from a heavy concentration in western California, where IIRIRA funded wall improvements, to eastern California, Arizona, and Texas, where the INS launched new operations (2006, p. 912-3;

Orrenius 2004, p. 281, 296). Trends in immigrant apprehensions by Border Patrol followed suit, with the exception of Texas (2006, p. 912-3).

Meanwhile, academic analysis and media reports alike recognize the INS's decreasing emphasis on workplace enforcement in the late 1990s (Hanson 2006, p. 910-1; Uchitelle 2000). In an effort to boost its presence on the border, INS reallocated staff away from the enforcement of employer sanctions, a component which was already small in comparison with border security and on its own terms (Hanson 2006, p. 910-1; Uchitelle 2000). By "2003, U.S. immigration authorities devoted fifty-three times as many officer hours to linewatch enforcement as to worksite enforcement," and the number of employer citations fell accordingly (Hanson 2006, p. 910). These trends suggest that IIRIRA's threat to the agricultural labor supply would primarily materialize through prevention at the border rather than deportation in the interior.

In summary, IIRIRA might have had important effects on agricultural industry, but the literature is silent on the empirical outcome. Thus, this study assumes the important role of examining the relationship between IIRIRA and agricultural industry. Results could better inform the positions of both policymakers and farm lobbyists as they approach current and future immigration reform proposals which are heavy on employer sanctions and/or border security.

II.G. A Potential Key to New Destinations Theory

The effects of IIRIRA are also relevant to a broader discussion on the shift in immigration destinations observed during the 1990s. The literature abounds with "push" and "pull" explanations for the significant shift away from traditional migration destinations, like California, to new destinations, like North Carolina, which occurred in this period.⁸ Policy

⁸ See McConnell (2008) for a good review of the literature on new destinations theory.

reforms are important candidate explanations for significant destination shifts because of their discrete implementation and potentially large repercussions.

Policy reforms in general might make some states more or less attractive to potential immigrants by differentially affecting living and working conditions. For undocumented immigrants, state-by-state differences in border security seem to affect the choice of destination even more fundamentally than do the living and working conditions there (Massey and Capoferro 2008; Orrenius 2004; McConnell 2008, p. 776). Orrenius (2004) examines the role of localized INS border security operations on immigration flows, particularly in the pre-IIRIRA period, and concludes that these policies shifted migration away from California towards Arizona and Texas. Massey and Capoferro (2008) go a step further by comparing IRCA, Proposition 187 in California, changing INS policies, and changing labor demand before settling on INS policies as the best explanation for the “dramatic and massive” shift in 1990s immigrant destinations away from California to nontraditional states (2008, p. 47). Whereas in 1990, only eight states received one percent or more of the proportion of recent Mexican immigrants, in 2000, nineteen states received at least one percent (2008, p. 38). Likewise in 1990, only three states, California, Texas, Illinois, and Arizona, received more than three percent of recent Mexican immigrants, whereas in 2000, eight states did so, including relatively large increases for Colorado, Georgia, and North Carolina (2008, p. 38). McConnell (2008) finds significant decreases after IIRIRA in proportion of Mexican immigrants in rural and traditional urban destinations and a significant increase in nontraditional urban destinations (2008, p. 783).

IIRIRA could play a significant role in explaining these shifts in destination. Among the literature reviewed, only McConnell (2008, p. 776) considers this possibility, and the sources which she cites as also considering this possibility do not actually discuss the role of IIRIRA in

shifting destinations. IIRIRA could indeed affect immigrant destination by causing potential undocumented immigrants to cross the border at locations where border security is looser. This is the mechanism considered most extensively in the literature. However, IIRIRA might also affect destination as potential undocumented immigrants, or even undocumented immigrants already within the U.S., avoid states where the INS is most likely to investigate workplaces. States bordering Mexico are obviously prime targets.

Evidence of an IIRIRA effect on immigrant destinations could also be confounded with a shift in immigrant occupations. Immigrants could be expected to avoid industries where INS enforcement is most likely due to high estimated quantities of undocumented immigrants employed and/or the ease with which industry workplaces could be raided. For both these reasons, the agricultural industry is a low-hanging fruit for the INS. It was these sorts of INS enforcement tactics which Henry Voss hoped to cease when he requested an INS search warrant provision in IRCA, as discussed above (“Immigration Reform” 1985, p. 175; Martin 1998a, p. 88-9). Thus, IIRIRA might create a tendency for immigrants to seek non-agricultural jobs, which would more likely lead them to states where non-agricultural jobs occupy a greater share of the low-skilled job market than do agricultural jobs.

Considering these mechanisms by which IIRIRA could affect destinations, existing research does leave open the possibility of an IIRIRA effect, even if it does not pin the evidence to this law in particular. California and Texas long received the majority of undocumented immigrants prior to the 1990s but experienced significant declines in new Mexican immigrants by 2000 (Massey and Capoferro 2008, p. 38; Card and Lewis 2007, p. 194, 198).

Yet, this evidence is problematic for several reasons. Massey and Capoferro (2008) fail to attribute the observed trend to any particular INS policy reform and to any particular point

during the 1990s. Card and Lewis (2007) suffer from the Census's undercount of undocumented Mexicans, which they acknowledge (p. 196), as well as from the possibility that their use of Metropolitan Statistical Areas (MSAs) alone does accurately capture farm workers. As for occupational change, Card and Lewis (2007) find evidence of a shift away from agriculture towards other occupations, especially construction for Mexican immigrant males (2007, p. 202), though this result must again be taken with a grain of salt given problems with their data set. Overall, however, the literature suggests that IIRIRA might be a key push/pull factor for the changes in immigrant destinations and occupations observed during the 1990s. As indicated by social network theory, an initial shift in immigrant destination and/or occupation caused by IIRIRA would likely snowball over time as current immigrants relay information on good destinations and occupations to potential immigrants back home (cf. McConnell 2008, p. 773-6).

II.H. Alternative Possible Explanations for New Destinations

Despite the salience of IIRIRA for new destinations and occupations, several alternative factors might instead explain or at least contribute to the trends which this study will examine. First, minimum wage law adjustments concurrent with the passage of IIRIRA might affect the going wage for farm workers indistinguishably from the potential IIRIRA influence on wage by affecting the farm labor supply. Changes in federal and/or state minimum wage laws might thus represent a push or pull factor for potential immigrants and immigrants already in the U.S. to choose certain state destinations over others

More importantly in the literature, welfare reform legislation could also confound the IIRIRA effects on destinations. George Borjas, the authority on this topic, finds evidence to support the “welfare magnet” hypothesis, in which potential immigrants choose the state with the

greatest welfare benefits, all else equal (Borjas 1999). Indeed, immigrant clustering in California deepened during the 1970s and 1980s as the state's welfare package grew to become the most generous relative to other immigrant-receiving states (1999, p. 616, 618). Nevertheless, for Mexican immigrants, Borjas does not think that California welfare benefits are as important a pull factor as close proximity and social networks (1999, p. 620). Despite Borjas's reservations, a reform which reduces California's welfare benefits could theoretically push Mexican immigrants already in California to other U.S. states which become relatively more generous. In turn, other potential immigrants would learn of their decision through social networks and likely follow suit.

Thus, the effects of 1996 welfare reform on immigrant destinations could be confounded with IIRIRA. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) includes the relevant Title IV, "Restricting Welfare and Public Benefits for Aliens" (H.R. Rep. No. 104-725, 1996). PRWORA restricted most means-tested entitlements, such as food stamps, cash benefits, and Medicaid, previously available to legal immigrants (cf. Espenshade, Baraka, and Huber 1997, p. 771-4; Borjas 2002, p. 1098). Undocumented immigrants were already barred from most welfare benefits, and PRWORA continued to restrict them to little more than emergency room assistance and a public education (Espenshade, Baraka, and Huber 1997, p. 771-3, 796).

When PRWORA reduced federal benefits, most states, including California, responded by increasing state-level welfare benefits available to legal immigrants (Borjas 2002). As a result, Borjas (2002) struggles to explain why the welfare participation rate dropped so sharply after PRWORA among immigrants in California relative to those in other states. He ultimately attributes this result to an exogenous "chilling effect" caused by California's Proposition 187 in

1994 (2002, p. 1108-9). Although this proposition restricted benefits for only undocumented immigrants, it reflected an anti-immigrant climate which likely dissuaded legal applicants who otherwise would have applied (2002, p. 1108-9). PRWORA might have had a similar chilling effect on potential immigrants to California who did not learn that California substituted its own welfare package for the federal benefits which PRWORA removed. Thus, PRWORA might represent a push factor for legal immigrants to choose nontraditional states.⁹¹⁰

This study uses several methods to rule out the potential endogenous effects of minimum wage law and welfare reform on immigrant destinations. As a result, any shifts in destination and occupation following IIRIRA should in fact reflect the law itself and should corroborate patterns in farm worker employment.

III. Methods

The ultimate goal of this study is to assess the effects of IIRIRA on agricultural industry. This purpose lends itself well to an interrupted time series analysis comparing the pre- and post-IIRIRA trends in characteristics which IIRIRA should affect. Effects on industry should primarily operate through changes in input costs, of which labor is the most pertinent to

⁹ PRWORA effects might be confounded with the effects of Proposition 187 inasmuch as each of these pieces of legislation restricted benefits for immigrants of one immigration status or another and neither law was well enforced (cf. Borjas 2002). Thus, they might have contributed indistinguishably to an immigrant's impression, whether or not he or she was undocumented, that welfare benefits would not be available in California. This study simplifies the scenario by including Proposition 187 effects within the umbrella of PRWORA effects.

¹⁰ IIRIRA, passed six weeks after PRWORA in 1996, also includes provisions which limit welfare benefits available to immigrants (cf. Wheeler 1997; Osuna 1997c). However, the IIRIRA provisions should only deepen the effects of welfare restrictions in general. As a result, this study should rule out the PRWORA explanation for observed trends if the data demonstrate effects contrary to those associated with welfare restriction. If the data instead demonstrate effects which could be attributed to welfare restriction, then PRWORA and IIRIRA remain indistinguishable.

immigration law. In this section, I first define the scope of agricultural industry for which immigrant labor is an important input.

Subsequently, I describe a method for identifying likely IIRIRA effects and isolating these effects from confounding trends. I begin to assess IIRIRA's effects by comparing trends around fiscal year 1997 on the supply side of the market for agricultural labor. I verify these supply side effects by examining migration data for those likely to work in agriculture *and* likely to be affected by IIRIRA. Given the disproportionately Mexican demographic in U.S. agriculture, the occupations and destinations of Mexican migrants before and after IIRIRA should corroborate the purported effect on labor supply. From there, I address potential alternative explanations for the observed labor market effects. In Section IV, I apply these methods, and in Section V, I discuss the implications of these labor market trends for agricultural industry.

III.A. Definitions

The “agricultural industry” is an expansive term which could include growers, labor contractors, input suppliers, output processors, and distributors of fruits, nuts, vegetables, grains, and horticultural products like flowers.¹¹ Some definitions also include cattle ranching and dairy products. Each of these facets of the industry employs a different proportion of immigrants due to differences in the skill set required of workers, the degree of mechanization of the work involved, and the historical employment pattern.

For the purposes of this study, the term “agricultural industry” signifies only those facets of the broader definition for which a significant proportion of the workforce is immigrant labor.

¹¹ See Martin 1998a for an explication of the scope of the industry as pertains to this discussion.

U.S. growers of fruits, nuts, vegetables, and horticultural products have historically relied most heavily on this labor source for several reasons. Work in these crop industries is particularly labor-intensive, relative to other, more mechanized crops like grains, and typically considered “low-skill” due to the lack of formal training required.¹² The low skill requirements qualify a large number of people for work in this crop industry. The large pool of labor and relatively low market prices for crops, relative to non-agricultural products, have historically resulted in low wages. The combination of physically demanding work and low wages makes the industry unattractive to people who can avoid it. Furthermore, the seasonal nature of work in these crop industries almost necessitates that workers be willing to migrate if they expect year-round employment. For these reasons, Americans have avoided base-level jobs in these crop industries, while immigrants have frequently accepted these jobs for lack of better alternatives (Martin 2002, p. 1127-8).

III.B. Farm Worker Employment Trends Suggest Industry Effects

Appropriate indicators of the effects of IIRIRA on agricultural industry should fulfill two criteria. First, by design, the legislation should affect the indicator. Second, the indicator should accurately represent some effect on the industry. Farm worker employment characteristics such as wage and labor hours per week fulfill both of these criteria. The border security and, to a lesser extent, workplace enforcement provisions of IIRIRA, if implemented as planned, should decrease the pool of available farm workers, which would in turn increase the pay and hours of those workers left in the industry, all else being equal. These indicators should affect the

¹² Some popular-level authors argue instead that this work is “high skill” because of the speed and dexterity required in order to make a decent wage off of piece rate pay and, for some crops, to avoid injury (Conover 1987, p. 42). However, these informal skills are gained on the job and thus do not represent a barrier to entering the industry.

agricultural industry by increasing the cost of labor inputs and improving workers' job security. Thus, I first determine the effects of IIRIRA on agricultural workers using employment indicators, which in turn signify effects on the agricultural industry.

Data on farm worker employment characteristics is taken from the National Agricultural Workers Survey (NAWS). The U.S. Department of Labor (DOL) launched NAWS under IRCA mandate and conducted the survey annually from 1988 through 2006. DOL gathered demographic and employment data by interviewing U.S. agricultural workers selected through multi-stage sampling during each of three annual seasons (Carroll et al. 2005; U.S. Department of Labor). The data is publicly available from the DOL website.

Farm worker employment characteristics should demonstrate discrete changes between fiscal years 1996 and 1997 and/or changes in their growth rates between the pre- and post-FY 1997 period. A change in growth rates is more likely because IIRIRA's provisions were phased in over the course of several years, and implementation would probably lag further behind.

Ordinary-least squares (OLS) regression can differentiate the effects of each fiscal year on wage and labor hours per week while controlling for a number of endogenous factors which could also affect these response variables. Equation (1) gives the OLS regression for inflation-adjusted wage,¹³

$$(1) \quad W_{it} = \beta_t + \beta X + \varepsilon_{it}$$

where W_{it} is a created variable for hourly wage of individual i in year t , which accounts for different methods of payment (hourly, piece rate, combination of hourly and piece rate, salary)

¹³ Wage is adjusted using the CPI Inflation Calculator available from the Bureau of Labor Statistics at http://www.bls.gov/data/inflation_calculator.htm. This calculator uses consumer price index by calendar-year, as opposed to the fiscal year metric otherwise used in this study. This discrepancy should not bias the results. See footnote 32.

(D. Carroll, personal communication, July 21, 2010); β_t is an indicator variable for each year fixed effect from $t = \text{FY } 1989$ through $t = \text{FY } 2006$; X is a vector of controls with set of coefficients β ; and ε_{it} is an error term reflecting all unobserved sources of error for individual i in year t . I control for a farm worker's region of interview, current immigration status, crop at time of interview, type of task (pre-harvest, harvest, post-harvest, etc.), and type of payment¹⁴ (U.S. Department of Labor 2007). See the Appendix for the factored categories of these controls. As a robustness check, I perform eight total regressions using variations of Equation (1). First, I omit all controls X and examine only the differences in wage by year fixed effect. The seven subsequent regressions include increasing numbers of controls X in varying combinations. The model including all control variables is hereafter referred to as the "full" model.¹⁵

I repeat this process with hours per week in Equation (2),

$$(2) \quad H_{it} = \beta_t + \beta X + \eta_{it}$$

where H_{it} is the number of hours worked in the last week at the interviewee's current farm job; η_{it} is an error term reflecting all unobserved sources of error for individual i in year t ; and the other terms mirror those in Equation (1).

Graphical representation of the regression output in Equations (1) and (2) provides an initial indication of the year fixed effects on wage and hours per week. However, in order to precisely capture the pre- and post-IIRIRA trends, I calculate the average annual change in the respective response variable for each of the eight variations of Equations (1) and (2). I verify the significance of these outcomes using Equations (3) and (4),

¹⁴ In one of the eight regressions, I include a created indicator variable for piece-rate pay, which is designed to determine whether the trend holds for those in traditional piece-rate pay industries.

¹⁵ In the case of wage and hours per week, the full model does not include the piece-rate pay indicator variable because of the redundancy of controlling for both piece-rate pay and wage type.

$$(3) \quad W_{it} = \beta_0 + \beta_1 t + \beta_2 P + \beta_3 tP + \beta X + \kappa_{it}$$

$$(4) \quad H_{it} = \beta_0 + \beta_1 t + \beta_2 P + \beta_3 tP + \beta X + v_{it}$$

where β_0 is a constant term; t is a linear time trend for fiscal year with coefficient β_1 ; P is an indicator variable for the period beginning in FY 1997 with coefficient β_2 ; tP is an interaction term whose coefficient β_3 indicates the change in the annual rate of wage/hours per week growth in the period beginning in FY 1997; κ_{it} and v_{it} are error terms reflecting all unobserved sources of error for individual i in year t ; and X is the same vector of control variables with set of coefficients β used in Equations (1) and (2). I use Equations (3) and (4) with the complete vector of controls in order to determine the effects on wage/hours per week of the “full” model. If the coefficient of the tP term is statistically significant, I would reject the null hypothesis that growth rates are equivalent in the periods before FY 1997 and beginning with FY 1997. Such a conclusion would suggest the influence of IIRIRA on farm worker employment characteristics.

III.C. Mexican Migration Trends Support IIRIRA Explanation for Employment Trends

If IIRIRA is indeed responsible for any observed changes in farm worker characteristics, migration patterns should reflect these shifting characteristics. IIRIRA would affect farm worker employment characteristics by directly affecting one or both of two populations: undocumented migrants established in the U.S. and/or undocumented migrants attempting to enter the U.S.¹⁶ According to the NAWS data, approximately 73 percent of farm workers surveyed were born in Mexico, of whom 54 percent report being ‘unauthorized’ to be in the U.S. under any existing

¹⁶ Here, terminology shifts from “immigrant” to “migrant” as a reflection of the fact that not all Mexicans who come to the U.S. to work intend to stay in the U.S. Furthermore, they frequently move from place to place within the U.S. In practice, the distinction between the two terms is unimportant for this discussion of Mexican agricultural work performed in the U.S. Thus this study often uses the terms interchangeably.

program. The fact that 95 percent of workers born in Mexico completed their highest grade of schooling in Mexico indicates that virtually all Mexican workers came to the U.S. for the purpose of working, rather than arriving as children who would first finish their education in the U.S. These demographic characteristics of farm workers in U.S. agriculture verify that IIRIRA should have a direct, substantial effect on Mexican migrants, if both IIRIRA's border security and workplace enforcement provisions were implemented as designed.

In order to determine whether IIRIRA did in fact affect migration trends, I use a data set comprised solely of Mexican migrants, the population most likely to be impacted by IIRIRA's border security and workplace enforcement provisions. Researchers from Princeton University and the University of Guadalajara launched the Mexican Migration Project (MMP) in 1982 and continue to survey different Mexican communities each year since (MMP 128). Whereas the NAWS gathers information on all migrant farm workers in the U.S. regardless of national origin, the MMP records the migration experiences of Mexicans alone and independently of their occupations. Through March 2010, these university researchers had gathered data in 128 Mexican communities with varying social, economic, and geographic characteristics and followed up with a non-random sample of migrants from each of these communities upon their arrival in U.S. locations (MMP 128; Durand and Massey 2004, p. 325, 330).¹⁷

The MMP permits two identification strategies for isolating the precise factor(s) causing any changes observed in the NAWS data beginning in FY 1997. First, unlike NAWS, the MMP

¹⁷ Although there is some concern about how well MMP data on specific communities represents Mexican migrants in general (cf. Hanson 2006), Durand and Massey (2004) show that the social characteristics of migrants to the U.S. are comparable between the MMP and a recent Mexican national survey on the majority of indicators (2004, p. 330-5).

includes migrants in both agricultural and non-agricultural occupations.¹⁸ Using a chi-squared test, I can thus determine whether the proportion of migrants entering and/or already employed in U.S. agricultural jobs changed between the pre- and post-IIRIRA periods. These changes should corroborate any changes in farm worker employment characteristics observed in the NAWS data, strengthening the evidence that observed effects are attributable to IIRIRA-induced change in immigration patterns.

Second, the MMP differentiates migrant destinations by state, which provides an important opportunity precluded by the region-level data available in NAWS. Using another chi-squared test, I can determine whether the proportion of migrants headed to California and Texas, states which have traditionally received the greatest numbers of Mexican migrants, changed following IIRIRA. Any change in this proportion should corroborate the occupational shift, given that these states have also traditionally been home to the greatest numbers of agricultural jobs. Furthermore, the post-IIRIRA proportion in California and Texas should most directly reflect the effects of the law given the traditional concentration of border security and workplace enforcement activity in these border states (cf. Hanson 2006, Orrenius 2004).

The availability of MMP data from both migrants' first and last U.S. migrations increases the robustness of evidence from each of these identification strategies.

III.D. Addressing Alternative Explanations for Migration Trends

Analysis of MMP data by occupation and state destination should reinforce NAWS observations which either support or lack sufficient evidence to support an IIRIRA effect.

¹⁸ Unfortunately, unlike NAWS, the MMP does not distinguish employment in agricultural industries by crop type. As a result, the MMP cannot directly corroborate NAWS findings by crop industry. MMP data on non-agricultural workers nevertheless makes possible an identification strategy which NAWS did not.

However, identification strategies to this point do not attempt to positively rule out alternative explanations for effects observed in FY 1997 and subsequent years. Two alternatives merit consideration for their potential either to create effects not attributable to IIRIRA or to mask legitimate IIRIRA effects. First, changes in minimum wage could induce wage effects which the NAWS data alone would suggest were attributable to IIRIRA. Second, the contemporaneous introduction of other legislation affecting migrants could also affect their migration patterns and in turn influence their farm work employment characteristics. PRWORA is the most likely candidate legislation given its passage in 1996 and its hefty provisions on immigrants.

Several methods enable me to determine whether minimum wage and/or PRWORA caused the observed effects on farm worker employment trends and migration trends. Each method relies on a subset of data for California fruit and nuts workers paid an hourly wage. Paring down to this subset offers several advantages after considering nationwide data in Parts B and C. First, California is the only NAWS region comprised by a single state, offering a unique opportunity to analyze state-level effects using data limited to farm workers. Given California's importance as a traditional site of agricultural jobs and a traditional Mexican migration destination, a California subset should corroborate speculation about the observed changes in farm worker employment characteristics and migration destinations based on nationwide data alone.

As the second justification for this subset, fruit and nuts industries are traditionally some of the lowest-paying, least-skilled, most labor-intensive farm work jobs in which undocumented workers are all the more likely. Third, hourly wage offers higher job security relative to piece-rate pay, because pay no longer depends on the healthiness of the crop yield. Piece-rate pay often fluctuates based on a number of characteristics of the fruit, such as size or the skin

condition of sensitive fruit like strawberries.¹⁹ Farm workers could be expected to sacrifice some amount of wage in exchange for the job security associated with an hourly wage.

Thus, for all these reasons, California fruit and nuts workers paid an hourly wage are a useful subset on which to test alternative explanations for effects which would otherwise be attributed to IIRIRA.

To test the minimum wage explanation, I modify the interrupted time series analysis on wage performed at the national level using Equation (1) and verified using Equation (3). In Equation (5),

$$(5) \quad C_{it} = \beta_t + \tau_{it}$$

C_{it} is a created variable for hourly wage of individual i who works in California on fruit and nuts for hourly pay in year t ; β_t is an indicator variable for each year fixed effect from $t = \text{FY } 1989$ through $t = \text{FY } 2006$; and τ_{it} is an error term reflecting all unobserved sources of error for individual i in year t . Here, the vector of controls has been removed because the subset rules out variation due to region, crop type, and pay type. I permit current immigration status and farm work task to vary in the initial use of this equation. In order to definitively rule out minimum wage as a potential explanation for wage trends, I perform another regression in which I further restrict the subset to unauthorized workers only. Agricultural employers might be less inclined to comply with minimum wage law for this subset of workers because it is already working unlawfully.

¹⁹ See Schlosser 1995 for this fluctuation in practice.

In order to more precisely examine any change in trend around IIRIRA, I calculate the average annual change in wage for these two nested subsets of California farm workers. I verify using regression Equation (6),

$$(6) \quad C_{it} = \beta_0 + \beta_1 t + \beta_2 P + \beta_3 tP + \sigma_{it}$$

where β_0 is a constant term; t is a linear time trend for fiscal year with coefficient β_1 ; P is an indicator variable for the period beginning in FY 1997 with coefficient β_2 ; tP is an interaction term whose coefficient β_3 indicates the change in the annual rate of wage growth in the period beginning in FY 1997; and σ_{it} is an error term reflecting all unobserved sources of error for individual i in year t . As before, this regression is initially restricted to the California subset described above, and then it is further restricted to analyze only unauthorized workers. If the coefficient of the tP term is statistically significant, I would reject the null hypothesis that growth rates are equivalent in the periods before FY 1997 and beginning with FY 1997. Such a conclusion would suggest the influence of IIRIRA on employment characteristics for this subset of California farm workers.

In order to rule out the PRWORA explanation, I identify a characteristic of the California subset which should change in response to a reduction in the availability of welfare benefits for immigrants. PRWORA would reduce the impetus to migrate to California only among those who would have qualified for California's generous pre-PRWORA welfare benefits. This subset of fruit and nuts workers paid an hourly wage is selected in part for its poverty relative to other possible subsets, making it the most likely candidate for welfare reciprocity conditional on these factors alone. Furthermore, children are an important and easily identifiable qualifier for welfare benefits. Thus, if welfare significantly attracted migrants, PRWORA should reduce the

proportion of migrants in California with at least one child. I extend the interrupted time series analysis to this setting using Equations (7) and (8),

$$(7) \quad K_{it} = \beta_t + \rho_{it}$$

$$(8) \quad K_{it} = \beta_0 + \beta_1 t + \beta_2 P + \beta_3 tP + \omega_{it}$$

where K_{it} is a created indicator variable for whether individual i who works in California on fruit and nuts for hourly pay in year t has at least one child in the household. The other variables are defined as before, with the exception of error terms ρ_{it} and ω_{it} specific to these equations.

IV. Results

In order to determine if and how IIRIRA affected agricultural industry, I first examined farm workers' employment characteristics leading up to and following the implementation of this legislation. The selected characteristics, namely hourly wage and labor hours per week, should have changed beginning in fiscal year 1997 if IIRIRA affected the size of the labor pool, as anticipated. If these characteristics changed significantly following IIRIRA, there would be strong grounds for attributing the observed effects to this legislation. Subsequently, I examined migration trends to determine whether post-FY 1997 employment trends could indeed be attributed to immigration law. Finally, I examined alternative possible explanations for these employment and migration trends.

IV.A. Evaluating Trends in Farm Worker Employment Characteristics

To measure the effects of IIRIRA on wage, I first examined the NAWS data for a distinct change in wage in fiscal year 1997 and/or a change in the rate of wage growth between the pre- and post-IIRIRA periods. Using Equation (1), I began with a basic regression of inflation-

adjusted wage on fiscal year and progressively added control variables which might be associated with both the independent variable (fiscal year) and dependent variable (wage). IIRIRA might have differential effects on wage depending on a farm worker's U.S. region of work, current immigration status, crop,²⁰ farm work task, and type of pay (hourly wage, piece rate, etc.). When controlling for these six factors, Figure 1 indicates that all fiscal year coefficients in the full wage model are highly significant ($p < 0.01$). Each of the other seven wage models²¹ with varying combinations of these controls also yielded highly significant coefficients for each fiscal year, indicating that the result is remarkably robust. In FY 1997, the wage coefficient increases by approximately 30 cents across all eight models, and in FY 1998, the wage coefficient jumps by another 50 to 60 cents, depending on the model. The small, consistent standard errors of these fiscal year coefficients for the full wage model, a feature of all eight wage models, verify the accuracy of the trend depicted in Figure 2.

Figure 2 shows the effect of fiscal year on hourly wage for each of the wage models. Differences from one fiscal year to the next amount to acceleration (or deceleration) in the growth rate of wage. Most relevant for this study, the subtle flattening or even decrease in wage from FY 1995 to FY 1996 is the nadir in a trend of decreasing wage growth rate of wage through the early 1990s. Subsequently, wage growth accelerates between FY 1996 and FY 1997, soon reaching a higher rate which is sustained through the mid-2000s.

²⁰ Crop has been adjusted to remove any individuals whose crop value is 0 or for whom no crop value is recorded.

²¹ In the interest of brevity, output from these regressions has been omitted. The eight total models (a) through (h) included the following controls: (a) fiscal year; (b) fiscal year and region; (c) fiscal year and current immigration status; (d) fiscal year, region, and current immigration status; (e) fiscal year, region, and crop; (f) fiscal year, region, current immigration status, crop, and farm work task; (g) fiscal year, region, current immigration status, crop, task, and whether paid by piece; (h) fiscal year, region, current immigration status, crop, farm work task, and wage type. Model (h) is referred to here as the "full" model. All controls in models (a) through (h) include indicator variables for each applicable category. The list of categories for each variable can be found in the Appendix. Sample sizes for the eight regressions varied from 44,166 to 44,971.

Figure 1

Additive Effects of Fiscal Year on Three Response Variables:
Hourly Wage and Labor Hours Per Week²²

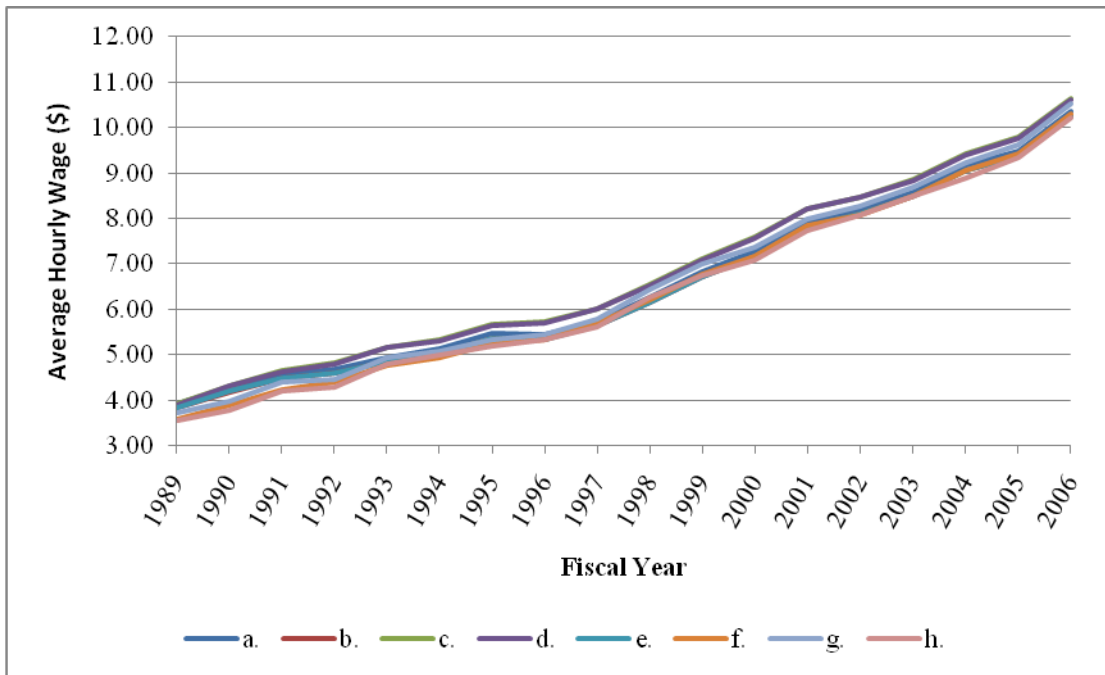
| | Wage | Hours/Week |
|-------------------------------|-------------------|--------------------|
| FY 1989 | 0.00 -- | 0.00 -- |
| FY 1990 | 0.23** (0.056) | -2.10** (0.558) |
| FY 1991 | 0.66** (0.055) | -0.63 (0.557) |
| FY 1992 | 0.75** (0.056) | -4.30** (0.558) |
| FY 1993 | 1.24** (0.057) | -2.60** (0.564) |
| FY 1994 | 1.44** (0.058) | -2.25** (0.567) |
| FY 1995 | 1.66** (0.056) | -2.06** (0.563) |
| FY 1996 | 1.80** (0.056) | -1.80** (0.560) |
| FY 1997 | 2.06** (0.057) | 0.01 (0.568) |
| FY 1998 | 2.72** (0.056) | -2.99** (0.562) |
| FY 1999 | 3.20** (0.057) | 0.26 (0.563) |
| FY 2000 | 3.54** (0.058) | 4.19** (0.569) |
| FY 2001 | 4.20** (0.058) | 2.71** (0.573) |
| FY 2002 | 4.52** (0.059) | 1.35* (0.580) |
| FY 2003 | 4.96** (0.059) | -0.25 (0.576) |
| FY 2004 | 5.36** (0.059) | 4.89** (0.573) |
| FY 2005 | 5.79** (0.060) | 3.79** (0.581) |
| FY 2006 | 6.67** (0.061) | 3.35** (0.586) |
| R ² | 0.553 | 0.100 |
| R ² _{adj} | 0.553 | 0.099 |
| N | 44166 | 43075 |

*= Significant at p < 0.05 ** = Highly significant at p < 0.01

²² Again, each of these regressions is a “full” model with the explanatory variables fiscal year, region, current immigration status, crop, farm work task, and wage type.

Figure 2

Hourly Wage by Fiscal Year For Eight Wage Models^{23,24}



The shift which takes place between FY 1996 and FY 1997 deserves further clarification. As shown in Figure 3, the average annual rate of growth in farm workers' inflation-adjusted wages increased two-fold beginning in FY 1997. The size of this dramatic increase was remarkably consistent across models with a variety of controls and, as demonstrated by Figure 2, the pre- and post-IIRIRA growth rates are quite consistent throughout their respective periods. For example, model (h) in Figure 3, the full wage model, indicates a twenty-five cent difference between annual growth rates before and after IIRIRA. To determine the significance of this

²³ All results assume a baseline farm worker who is a citizen working in the East performing pre-harvest tasks on field crops for an hourly wage.

²⁴ Carroll et al. (2005) includes a similar graph showing the trend in real average hourly wage from 1993 through 2002. However, that graph does not capture the full range of NAWS data, as included in Figure 2 here; it does not include controls; and it is not accompanied by any analysis of the FY 1997 change shown and discussed here which is nevertheless also quite evident in that graph.

difference, I used Equation (3) to regress inflation-adjusted wage on fiscal year,²⁵ a dummy variable for the period beginning in 1997, an interaction term for the two, and the other controls in the full wage model. By this method, the average annual growth rate in the post-IIRIRA period is twenty-one cents greater, a highly significant difference (p-value ≈ 0.000). Although the post-IIRIRA growth rate produced by regression is slightly smaller than by manual calculation, the statistical significance of the difference in growth rates between the two periods verifies the trend observed graphically.

Figure 3

Average Annual Change in Wage Pre- Versus Post-IIRIRA Across Eight Wage Models

| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) |
|---------------------|------|------|------|------|------|------|------|------|
| FY 1989- FY 1997 | 0.23 | 0.23 | 0.26 | 0.26 | 0.23 | 0.27 | 0.26 | 0.26 |
| FY 1997- FY 2006 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.51 | 0.53 | 0.51 |

The marked change in wage and, more importantly, change in the rate of wage growth between FY 1996 and FY 1997/1998, across models, strongly suggests a point cause in FY 1996. Using only these results, however, it is still premature to attribute the effect to IIRIRA, since other stimuli in FY 1996 could also affect wage and wage growth.

Change in the number of labor hours per week should corroborate the trend observed in wage growth. Paralleling the wage procedure, I used Equation (2) to create eight regression models of hours per week on fiscal year and an increasing number of control variables.²⁶ Figure 1 above indicates that the majority of fiscal year coefficients are highly significant, though

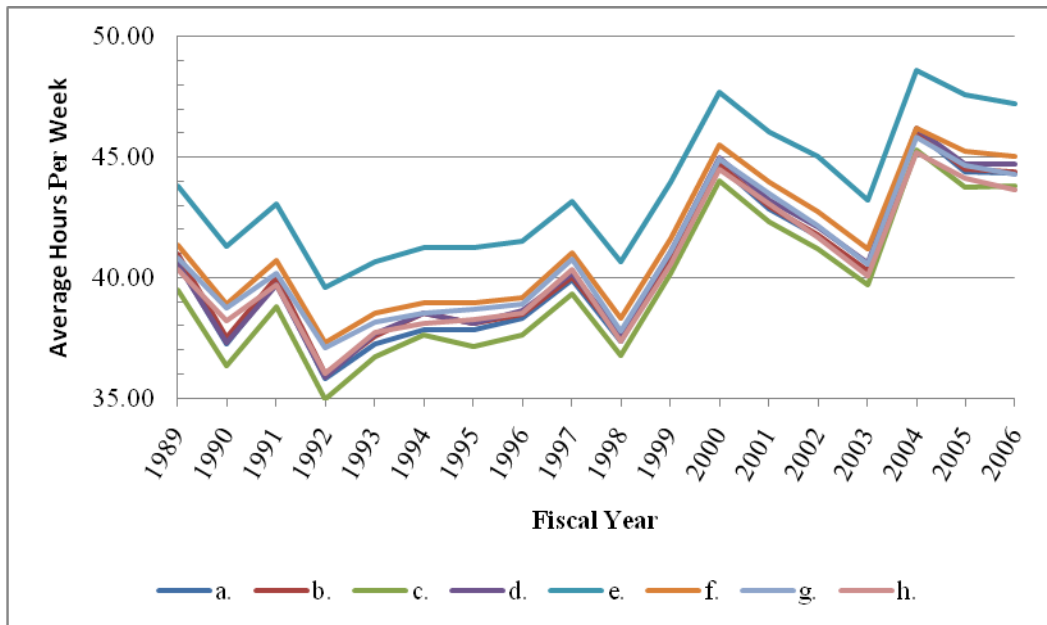
²⁵ Here, the fiscal year explanatory variable is not factored into individual year fixed effects because the goal is to capture the changing effect of fiscal year in the period beginning in FY 1997. The interaction term only has this interpretation when fiscal year is considered as a single categorical variable.

²⁶ See footnote 21 for the different sets of controls used in each model.

Figure 4 exhibits a much more volatile pattern in average hours per week than found in the wage model. This volatility aside, the trend in hours per week is slightly negative across models prior to FY 1997, but the trend clearly increases afterwards.

Figure 4

Labor Hours Per Week by Fiscal Year For Eight Hourly Models²⁷



This volatility is likely attributable in large part to the business cycle. The supply of agricultural labor is much more subject to natural fluctuations in the business cycle than is employers' demand for agricultural labor. The high stability of consumer demand for food insulates the agricultural industry from cyclic effects on other industries. In other words, agricultural employers will continue to need a steady labor supply even during a recession, and thus, we should not expect employer demand-driven effects on farm worker wages. Instead, workers laid off from other industries might seek employment in agricultural industry, causing

²⁷ As in Figure 2, all results assume a baseline farm worker who is a citizen working in the East performing pre-harvest tasks on field crops for an hourly wage.

the number of hours available to existing farm workers to decline. In Figure 4, the clear decrease in the average number of hours per week during recession periods, such as 1992 and 2002/2003, supports this explanation.

The fact that much of the volatility in Figure 4 is insignificant raises the specter that these deviations might represent random variation from the overall pre- and post-FY 1997 trends. However, Figure 1 shows that the standard errors of hours per week coefficients during such recession periods do not overlap with the standard errors in years surrounding these recessions. Thus, hours per week do in fact seem to decline during recessions. From the labor demand side, Figure 2 further corroborates this explanation with slight dips in wage in 1992 and 2002/2003, which would result as an influx of labor from other industries drives down the going wage.

In order to distinguish the overall trend in hours per week before and after IIRIRA, I found the average annual rate of growth in hours per week across the eight models, as shown in Figure 5. Here, business cycle fluctuation and any other sources of volatility drop out, and we are left with distinctly different patterns in these two periods. Considering all the models, average hours per week probably fall, or at best, remain steady prior to FY 1997. After IIRIRA, average hours per week steadily climb by twenty to thirty minutes per week annually.

To verify the significance of this trend, as for the wage data, I used Equation (4) to regress hours per week on fiscal year, a dummy variable for the period beginning in 1997, an interaction term for the two, and the other controls in the full hours per week model (model (h) in Figure 5). The annual growth rate after IIRIRA increased by approximately 0.61 hours per week (p-value ≈ 0.000). This coefficient is greater than any of the post-IIRIRA rates indicated by raw calculations in Figure 5, but this makes sense because the regression captures more of the non-

volatility shown in Figure 4. Thus, the data clearly demonstrate that farm laborers worked an increasingly higher average number of hours per week in the post-IIRIRA period.²⁸

Figure 5

Average Annual Change in Hours Per Week Pre- Versus Post-IIRIRA
Across Eight Hours Per Week Models

| | (a) | (b) | (c) | (d) | (e) | (f) | (g) | (h) |
|---------------------|-------|-------|-------|-------|-------|-------|------|------|
| FY 1989- FY 1997 | -0.09 | -0.12 | -0.02 | -0.04 | -0.08 | -0.04 | 0.00 | 0.00 |
| FY 1997- FY 2006 | 0.49 | 0.49 | 0.50 | 0.51 | 0.45 | 0.44 | 0.39 | 0.37 |

IV.B. Evaluating Trends in Mexican Migrant Characteristics

The NAWS data illustrates that farm worker wages and hours per week increased sharply beginning in fiscal year 1997. IIRIRA could explain the observed effects, though other influences in 1996/1997, including minimum wage law and PRWORA, are also plausible explanations for all or part of these effects.

In attribute these employment trends to the effects of an immigration law, I turned to the MMP data on Mexicans migrating to the U.S. MMP researchers ask respondents to indicate a number of characteristics which applied to their first and last U.S. migrations (or those of the migrating member of the family), including their occupation and destination in the U.S.^{29,30}

²⁸ Because the number of hours per week hovered just under 40 in the pre-IIRIRA period, it is plausible that legislation reducing overtime pay could have also stimulated the observed trend beyond 40 hours in the post-IIRIRA period. However, the Fair Labor Standards Act lists a number of exemptions from overtime pay which seem to apply to a large proportion of farm workers (U.S. Department of Labor 2009). Thus, overtime pay is not a likely contributor to the observed trend.

²⁹ All observed patterns were similar for both first and last U.S. migration, and the differences between the two are largely irrelevant in this context.

Figure 6

Mexican Migrant Occupations and Destinations Pre- Versus Post-IIRIRA³¹

| | 1989-1996 | 1997-2010 |
|-------------------------------|-----------|-----------|
| <u>% Agricultural Workers</u> | | |
| First U.S. Migration | 18.16 | 12.25 |
| Last U.S. Migration | 23.80 | 17.88 |
| <u>% Other Workers</u> | | |
| First U.S. Migration | 81.84 | 87.75 |
| Last U.S. Migration | 76.20 | 82.12 |
| <hr/> | | |
| <u>% California or Texas</u> | | |
| First U.S. Migration | 59.66 | 35.23 |
| Last U.S. Migration | 65.22 | 39.00 |
| <u>% Other States</u> | | |
| First U.S. Migration | 40.34 | 64.77 |
| Last U.S. Migration | 34.78 | 61.00 |

Figure 6 compares pre- and post-IIRIRA distributions of migrants between agriculture and other industries and between California/Texas and other states.³² In both cases, chi-squared tests indicate highly significant differences across periods (p-value \approx 0.00). In terms of

³⁰ The use of both first and last U.S. migration double counts those who migrated only once. When considering the last migration of only those who migrated at least twice, the percentage in agriculture increases by about five percent in both the pre- and post-IIRIRA periods. This finding suggests that the percentage of workers in agriculture in the “Last U.S. Migration” category reported above is biased downwards. Given the seasonality of the agricultural industry, it makes sense that those who choose to make multiple migrations are more likely to be agricultural workers. In both periods, Mexican migrants in California and Texas, both states with high amounts of agriculture, increased by two percent, corroborating this seasonality explanation.

³¹ I begin the pre-IIRIRA period in 1989 in order to make these proportions comparable with the statistics produced using NAWS data. It is important to rule out an equivalent amount of post-IRCA effects in both cases. MMP data available for 2007 through 2010 should stabilize any trends in occupations and destinations which began in the 1990s.

³² The MMP uses calendar year instead of fiscal year, and thus the MMP-NAWS comparison is admittedly an approximation. However, the fact that only three months of 1996 are included in FY 1997 and excluded from calendar year 1997 means that the difference between the two measures should be minimal, especially considering that IIRIRA could probably not be fully and uniformly implemented within such a short span. See footnote 13.

occupation, the percentage of Mexican migrants in agriculture was relatively small to begin with and significantly decreased after the implementation of IIRIRA in FY 1997. More dramatically, the percentage of Mexican migrants in California or Texas, two states with large agricultural industries, fell approximately twenty-five percent between the two periods. Taken together, these characteristics indicate two concurrent phenomena. Mexican migrants took fewer agricultural jobs after 1997, though when they did, they were more likely to work outside of the two states which have traditionally contained the majority of U.S. agricultural jobs. I will discuss the implications of this combined pattern in Section V.

IV.C. Subset of California Farm Workers

i. Verifying Employment Characteristics and Migration Trends

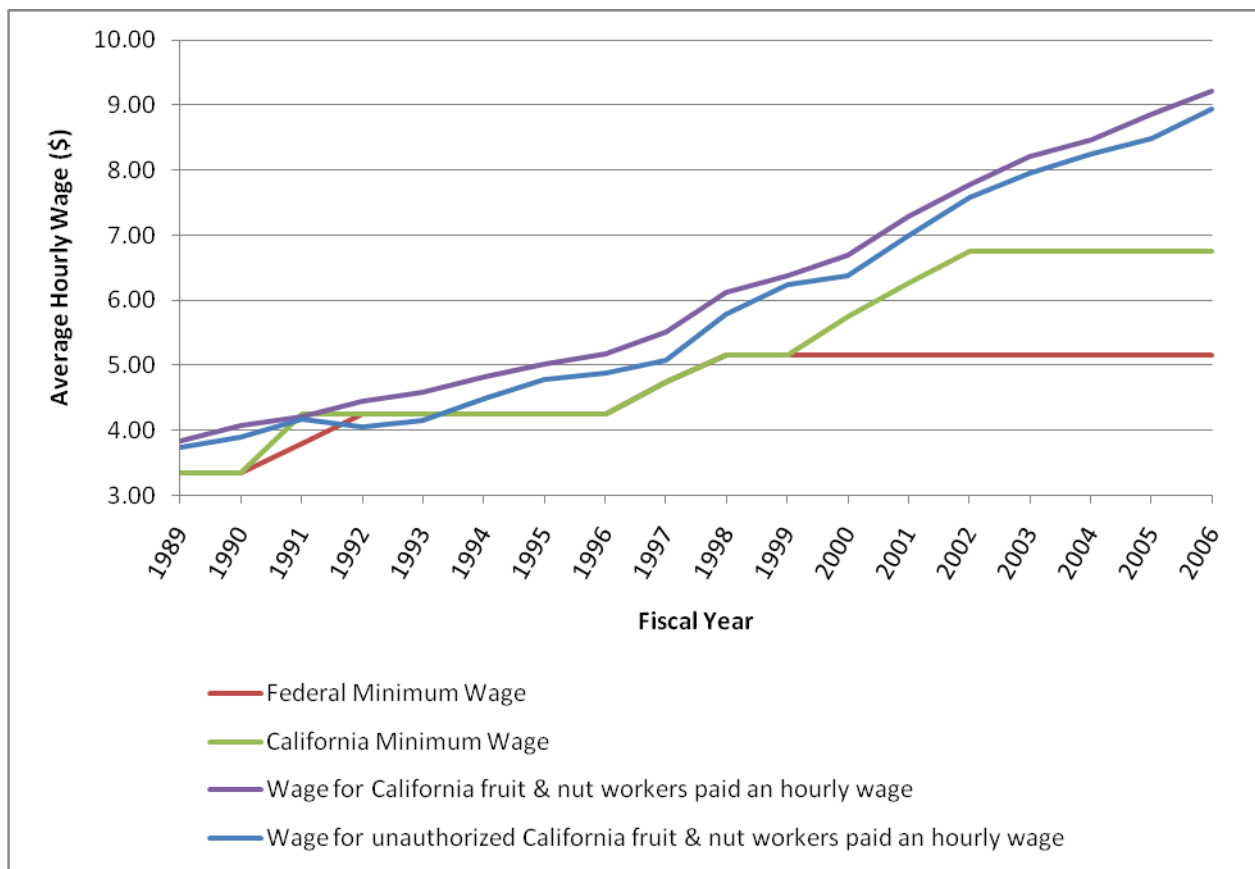
In order to determine why migrants might choose traditional agricultural states less frequently after 1997, I performed a narrower analysis using NAWS data on California fruit and nut workers paid an hourly wage. Regression using NAWS data verifies the expectation that fruit and nut workers and hourly wage workers receive the lowest wages among workers on various crops and of various pay types, respectively.

As indicated in Figure 7, regression of inflation-adjusted wage on fiscal year using Equation (5) for this subset of California workers produced an acceleration in wage growth not unlike the trend among all farm workers nationwide (cf. Figure 2). Figure 7 compares this trend with the trend for unauthorized California fruit and nut workers paid an hourly wage. Although the latter is consistently lower by a small quantity, the trend for the unauthorized subset is largely the same, particularly at the critical 1997 break point. This comparison is valuable because unauthorized workers could be subject to greater wage exploitation, though apparently that is not

the case here. Figure 8 confirms the statistical and practical significance of the change in annual wage growth rates for both of these subsets. Here, regression using Equation (6) indicates that the change in average annual growth rate was approximately equal between the unauthorized and full subsets.

Figure 7

Comparing Wage Rates for Subsets of California Farm Workers
Between FY 1989 and FY 2006³³



³³ Minimum wage data taken from U.S. Department of Labor (2010).

ii. Addressing Potential Minimum Wage Effects

The results for both subsets of workers are interesting when considering state and federal minimum wages and the decreased number of agricultural workers in California after 1997, as indicated by MMP data in Part B. I expected farm worker wage to only barely exceed minimum

Figure 8

Average Annual Change in Wage Growth in Subsets of California Farm Workers
Pre- Versus Post-IIRIRA

| | | Fruit & Nuts Workers Paid an Hourly Wage | Unauthorized Fruit & Nuts Workers Paid an Hourly Wage |
|------------|---------------------------|---|--|
| Manual | FY 1989-FY 1997 | 0.21 | 0.17 |
| | FY 1997-FY 2006 | 0.41 | 0.43 |
| Regression | Change in Rate in FY 1997 | 0.22** | 0.23** |
| | | (0.01) | (0.01) |

** = Highly significant at $p < 0.01$

wage, or even to fall beneath minimum wage, due to limited agricultural exemptions from minimum wage law combined with probable under-the-table payment from at least some agricultural employers. Upon observation, actual wage exceeds minimum wage for nearly all of the period from FY 1989 to FY 2006. The fact that actual exceeds minimum by an even greater amount after IIRIRA accords with the observed acceleration in wage rate growth after IIRIRA.

This acceleration mirrors the acceleration at the national level, as discussed in Part A.

Furthermore, this trend even holds for undocumented workers, to whom employers would likely feel less obliged to pay minimum wage, given their noncompliance with the law already.³⁴ Thus,

³⁴ Some of these employers might not know that their workers are undocumented, given the strength of false documents. This situation would reduce the usefulness of the unauthorized evidence to make a stronger counterargument, but it certainly does not detract from either of these observed trends.

there is no evidence to support the claim that increases in minimum wage drove the increase in average annual wage among farm workers.

iii. Addressing Potential PRWORA Effects

One final method of distinguishing the effects of IIRIRA from other exogenous influences on agricultural workers involves examining the proportion of California farm workers in the NAWS data who have at least one child in the household. Figure 9 focuses again on the subset of California fruit and nuts workers paid an hourly wage.³⁵ Here, a downward trend in the proportion with a child is evident even before the enactment of IIRIRA and PRWORA, with a slight upward trend after these laws. Figure 10 shows the average annual change in proportion of households with a child. Here, manual, and even more so, regression results indicate a statistically significant but practically minor shift in the counterintuitive direction. Instead of a post-PRWORA/IIRIRA *decrease* in the growth rate of the proportion of households with a child, Figure 10 indicates an approximately four percent annual *increase* in this growth rate. Therefore, PRWORA either had no deterrent effect on migrants with a child, a very temporary effect lasting only a few years, or an effect which materialized in other ways. The obscurity of any PRWORA impact reinforces the hypothesis that observed effects are attributable to IIRIRA.

³⁵ Although comparison with the unauthorized equivalent of this subset would be useful, as it was in Figures 7 and 8, few of the coefficients of the regression of child proportion on fiscal year were significant for the unauthorized subset. Given that the number of migrants in the sample decreased from 6,826 in the full subset to 2,948 in the unauthorized subset, the insignificance might be due to too small a sample size for any given year in the latter case.

Figure 9

Proportion of Subset of California Farm Workers
Who Have at Least One Child in the Household
Between FY 1989 and FY 2006

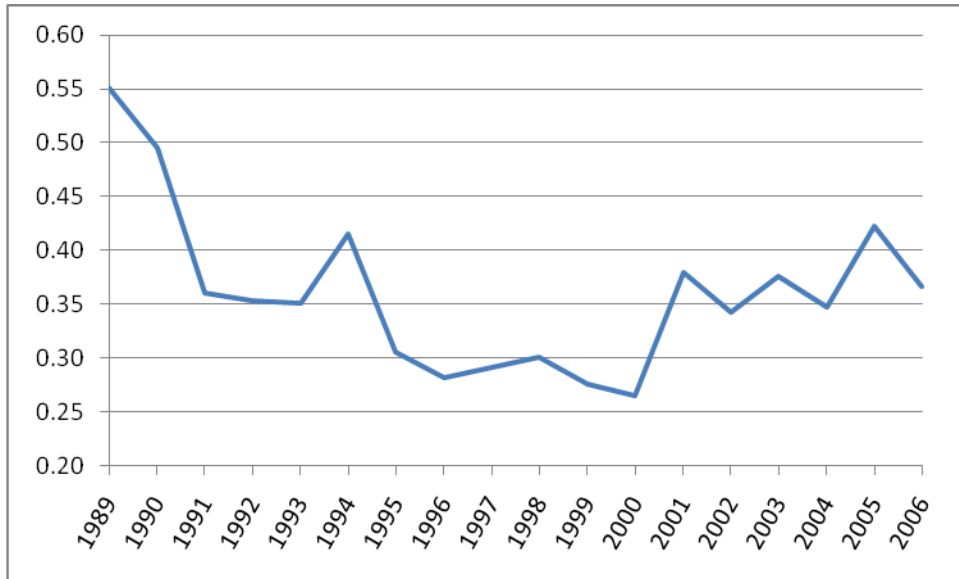


Figure 10

Average Annual Change in Proportion of Households with at Least One Child Among Subset of California Farm Workers Pre- Versus Post-PRWORA/IIRIRA

| Manual | | Regression |
|-----------------|-----------------|---------------------------|
| FY 1989-FY 1997 | FY 1997-FY 2006 | Change in Rate in FY 1997 |
| -0.03 | 0.01 | 0.04** (0.005) |

** = Highly significant at $p < 0.01$

V. Discussion

The observed trends in employment, destination, occupation, and family characteristics are consistent with the anticipated effects of IIRIRA. These trends corroborate each other and rule out several attractive alternative explanations. Thus, the evidence strongly suggests that IIRIRA is the principle cause for the marked change in these trends around fiscal year 1997.

V.A. Mechanisms for IIRIRA Effects on Employment, Destination, and Occupation

Beginning in FY 1997, annual growth in farm workers' wages and weekly hours clearly accelerated. These observations together indicate increasing labor intensity.³⁶ Labor intensity probably increased in the post-IIRIRA period because of a smaller labor pool from which agricultural employers required a greater numbers of hours.³⁷ In order to persuade workers to log more hours each week, employers had to compensate them with higher wages.

Pending confirmation with trends in destination, occupation, and family characteristics, these employment trends do not, in and of themselves, verify that IIRIRA was responsible, though the substance of the law and its discrete implementation beginning in FY 1997 make this relationship likely. If IIRIRA was in fact responsible for these employment trends, this study indicates drastically greater success in implementation of IIRIRA enforcement mechanisms than IRCA enforcement mechanisms, contrary to low expectations that IIRIRA could achieve where IRCA failed (cf. Espenshade, Baraka, and Huber 1997).

As further evidence for an IIRIRA explanation, this law's enforcement mechanisms can also explain the post-IIRIRA shift in Mexican immigrant characteristics away from agricultural occupations and away from California and Texas, the traditional, heavily-agricultural destination states. This finding reinforces the general new destinations/occupations trends observed by Massey and Capoferro (2008) and Card and Lewis (2007). If indeed attributable to IIRIRA, the

³⁶ Labor intensity is the number of hours per worker per week.

³⁷ One provision of IIRIRA increased immigrant visa duration from four to six months (H.R. Rep. No. 104-828, 1996, p. 173). This makes it more plausible that employers could hire a smaller number of workers for longer periods each year, which would be another way of increasing labor intensity.

law caused the shift by affecting immigrants already in the United States and/or potential immigrants to the United States through one or both of two possible mechanisms.

Increased border security is one explanation for an IIRIRA-induced shift in destinations. In this scenario, potential Mexican immigrants to the United States would choose to cross in areas of reputedly lower border security. These immigrants would find themselves in new locations upon arrival in the United States, and thus they would more likely end up in new final destinations. In turn, future immigrants would likely follow suit due to the effects of social networks. This explanation would build on the research of Orrenius (2004) and Massey and Capoferro (2008), both of which suggested INS policy effects on border crossing but neither of which made any reference to IIRIRA as a motivator for INS actions.

Effective workplace enforcement is another possible explanation for the shift in destinations observed after IIRIRA. If the INS did in fact enforce IIRIRA heavily in the easy-target agricultural industry, immigrants already in the United States might have responded by moving to different occupations within their traditional destination states. Alternatively, whether or not this intrastate occupational shift occurred, an interstate occupational shift would be necessary to account for the shift away from traditional destination states *if* immigrants already in the United States were responsible for launching the transition to new destinations. In this scenario, immigrants already in the United States would have moved to different states where chances of deportation were lower and agricultural job opportunities less prevalent. Potential immigrants would have followed their lead upon receipt of information through social networks, reinforcing the trend and ensuring its persistence.

If immigrants already in the United States were *not* responsible for launching the transition to new destinations, the border security explanation for new destinations is the more

credible primary mechanism by which IIRIRA might have affected undocumented immigration flow.

V.B. Discrediting Alternative Explanations for Proposed IIRIRA Effects

Despite strong evidence for an IIRIRA shift, minimum wage changes and welfare reform are plausible alternative explanations.

In order to consider these alternatives, this study honed in on a subset of workers for whom wages were particularly low. Among California farm workers, fruit and nut workers paid an hourly wage would more likely be affected by minimum wage law and welfare reform because workers in these crops and pay types receive the average lowest wages.

In the post-IIRIRA period, wage growth within this subset exhibited similar acceleration to that observed at the national level. Actual wages paid to this subset of workers sharply diverged from federal and California state minimum wages. The fact that the divergence persisted even when narrowing the subset to undocumented workers, to whom employers would not logically feel obliged to pay minimum wage, confirms that these laws were not driving the post-IIRIRA acceleration in wage growth in California.

The particularly low wages in the California subset of fruit and nut workers paid an hourly wage make these workers the best candidates for welfare. Members of this subset with at least one child should be even more likely to qualify for welfare. Interestingly, the proportion of this subset with at least one child slightly increased after PRWORA, an observation which runs counter to the decrease in welfare participation among California immigrants which Borjas (2002) observes. Borjas's Current Population Survey (CPS) data might overstate the decline in welfare participation rates because the CPS might undercount agricultural workers in much the

same way that the Census undercounts agricultural workers (cf. Card and Lewis 2007, p. 196). Regardless, the trend observed here strongly discounts the possibility that PRWORA pushed immigrant farm workers out of California.³⁸ PRWORA thus does not seem to drive the new destination trends attributed above to IIRIRA.

V.C. Limitations and Implications of IIRIRA for Undocumented Immigration Flows

Trends in employment, destination, and occupation, together with a lack of evidence for alternative explanations, indicate that IIRIRA enforcement successfully influenced the flow of undocumented workers into and/or within the United States. However, this study does not permit conclusions on the relative effectiveness of border security provisions versus workplace enforcement provisions. Likewise, it does not permit conclusions on whether IIRIRA reduced undocumented immigration to the United States.

The data analyzed nevertheless do indicate that IIRIRA affected the movement of undocumented immigrants. IIRIRA's implementation might have rearranged undocumented immigrants, reducing the size of the agricultural labor pool. Alternatively, implementation might have actually reduced the number of undocumented immigrants present in the United States through some combination of border security and deportation. IIRIRA caused the observed trends through one, or probably both, of these influences.

³⁸ This trend also rules out the possibility that the effects of IIRIRA's welfare provisions are confounded with PRWORA effects. See footnote 9.

VI. Conclusion

The Illegal Immigration Reform and Immigrant Responsibility Act of 1996 appears to have had its intended effect. Fewer undocumented immigrant farm workers entered the United States and/or fewer successfully remained in the United States after IIRIRA. This study indicates that the American agricultural industry experienced significant and sustained adverse effects from this legislation due to a reduction in the size of its labor pool.

It is possible that IIRIRA's effect on the agricultural industry would not be so severe if we also considered the demand for agricultural products and the agricultural industry's other, non-labor, input costs. If IIRIRA did in fact reduce the number of undocumented workers in the United States, agricultural industry products would have fewer consumers in the United States. The industry would suffer somewhat if it did not also market its products in Mexico, where most of the consumers would instead live. This assumption is unlikely, though it remains plausible that the industry, or at least certain crop producers, could suffer a small adverse impact through reductions in product sales. Although it is unclear from this study whether IIRIRA did reduce the number of undocumented workers, the small possibility of consumer demand-driven impacts on the agricultural industry would only worsen the effects of IIRIRA.

On the input side, if IIRIRA reduced the number of undocumented workers in the United States or shifted them to non-agricultural destinations, the decrease in population in agricultural destinations would reduce the demand for land. As a result, the agricultural industry could expand production at lower cost. However, reports of migrant workers' poor living conditions suggest that the agricultural industry would not gain much extra land. In fact, the absence of

immigrant labor would probably drive up property values in some areas, further reinforcing the adverse effects of IIRIRA on the agricultural industry.³⁹

As far as IIRIRA's effects on workers, the law essentially performed the function of a union for undocumented farm workers. The industry had to pay higher wages to workers whose decreased competition translated into increased bargaining power. Undocumented immigrant farm workers who could successfully evade deportation reaped the fruits of this new arrangement, whereas those deported or prevented from entering the United States experienced disproportionate losses. The agricultural industry and these unsuccessful immigrants are strange bedfellows on the losing end of this legislation.

The effects of IIRIRA confirm the agricultural industry's dire expectations and contrast sharply with the effects of the Immigration Reform and Control Act of 1986. These findings should only reinforce the industry's aversion to present and future immigration reform proposals which call for heavy doses of border security and workplace enforcement.

It is no surprise that future immigration reform will require compromise. However, if reform proposals continue to favor enforcement mechanisms, agricultural industry could prove to be the most ardent opposition to reform that it has been in recent decades. In light of this possibility, legislators who favor enforcement-heavy reform might have to be the most willing to compromise, or at least the most willing to continue to tolerate the status quo.

³⁹ See Schlosser (1995) for an extensive illustration of migrants' use of land and corresponding effect on property values.

VII. Appendix

Controls Used in Select Regression Equations⁴⁰

| Control | Categories |
|--|--|
| Region of Interview | 1 East 2 Southeast 3 Midwest 4 Southwest 5 Northwest 6 California |
| Current Immigration Status | 1 Citizen 2 Green Card 3 Other Work Authorization 4 Unauthorized |
| Crop at Time of Interview | 1 Field Crops 2 Fruits & Nuts 3 Horticulture 4 Vegetables 5 Miscellaneous/Multiple |
| Task Type | 1 Pre-Harvest 2 Harvest 3 Post-Harvest 4 Semi-Skilled 5 Supervisor 6 Other |
| Pay Type | 1 By the Hour 2 By the Piece 3 Combination Hourly-Piece 4 Salary |
| Piece-Rate Pay (Variable Created from Pay Type; excludes Pay Type=3, Combination Hourly-Piece) | 0 No 1 Yes |

⁴⁰ U.S. Department of Labor (2007). Note: Regressions performed on the full model alone exclude the piece-rate pay variable.

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