Method of Pay, legal status, and wage gaps

By

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Introduction

- Survey data from the U.S. Department of Labor show that 77% of U.S. crop workers in 2006 are foreign-born. 51% are undocumented; 26% are legal immigrants.
- Extensive use of undocumented crop workers is because these workers are paid lower wages.
- U.S. crop worker average (nominal) pay per hour in 2006:
  - Undocumented immigrants: $7.70/hour
  - Legal immigrants: $8.96/hour
  - U.S.-born: $9.74/hour

Introduction

- **Minimum level of protection accorded to all agricultural workers via three laws:**
- **Fair Labor Standards Act (FLSA) of 1938 mandates that those in agricultural employment earn no less than the federal minimum wage; however, several exceptions are provided (e.g., small farms are exempted).**

Introduction

- **Migrant and Seasonal Agricultural Worker Protection Act (MSPA), 1983, as amended in 1986 and 1995 requires that workers when hired or recruited be informed (in writing if requested) of "the work to be performed, wages to be paid, the period of employment, whether state workers' compensation or state unemployment insurance will be provided." (U.S. Department of Labor, 2008b).**

Introduction

- **H-2A provisions of the Immigration and Nationality Act (INA) of 1952, as amended requires that employers must offer and pay all (U.S. and foreign) workers a wage rate that is higher of either the Adverse Effect Wage Rate (AEWR) or the prevailing wage for a given crop/area. These rates cannot be less than the federal or state minimum wage.**

Introduction

- Despite these protections, why are foreign-born crop workers paid lower wages, on average?
- 1. Foreign-born workers have lower productivity than U.S.-born workers;
- 2. Foreign-born workers face discrimination in the U.S. labor market;
- 3. There may also be productivity differences among the foreign-born depending on legal status;
- 4. Undocumented immigrants may experience more discrimination in the U.S. labor market than legal immigrants.

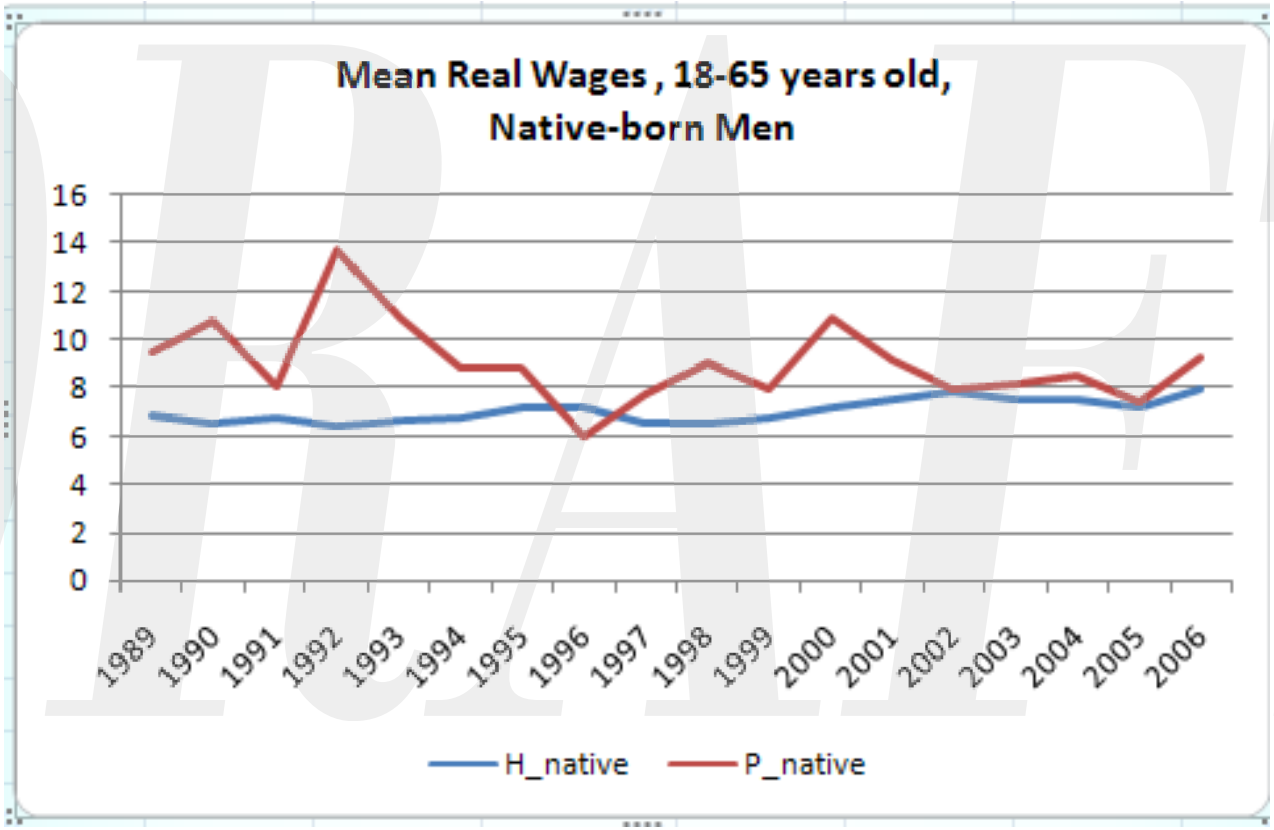
Introduction

- To address these issues, we take advantage of the availability of wage data by compensation method (hourly rate versus piece rate) and the legal status of foreign-born agricultural workers.
- Consider the following relevant features of the data we use (before "trimming" procedures are applied).

Introduction

Sample: Men, 18-65 years old			
status/pay method	Hourly	Piece	Total
Native			
Freq.	5,071	247	5,318
Row percentage	95.4	4.6	100.0
Column percentage	19.0	4.4	16.5
Foreign, legal			
Freq.	9,617	2,395	12,012
Row percentage	80.1	19.9	100.0
Column percentage	36.1	43.0	37.3
Foreign, non-legal			
Freq.	11,985	2,933	14,918
Row percentage	80.3	19.7	100.0
Column percentage	44.9	52.6	46.3
Total			
Freq.	26,673	5,575	32,248
Row percentage	82.7	17.3	100.0
Column percentage	100.0	100.0	100.0

Introduction



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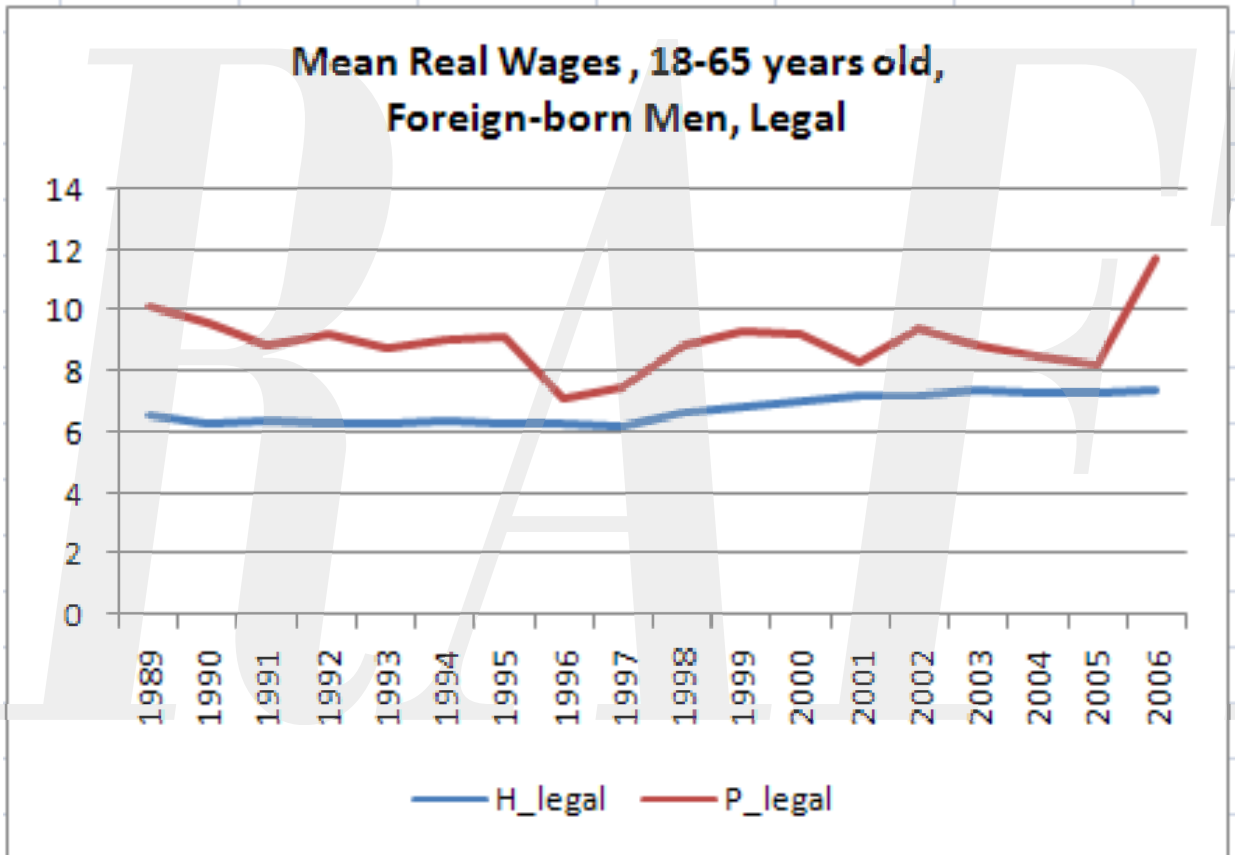

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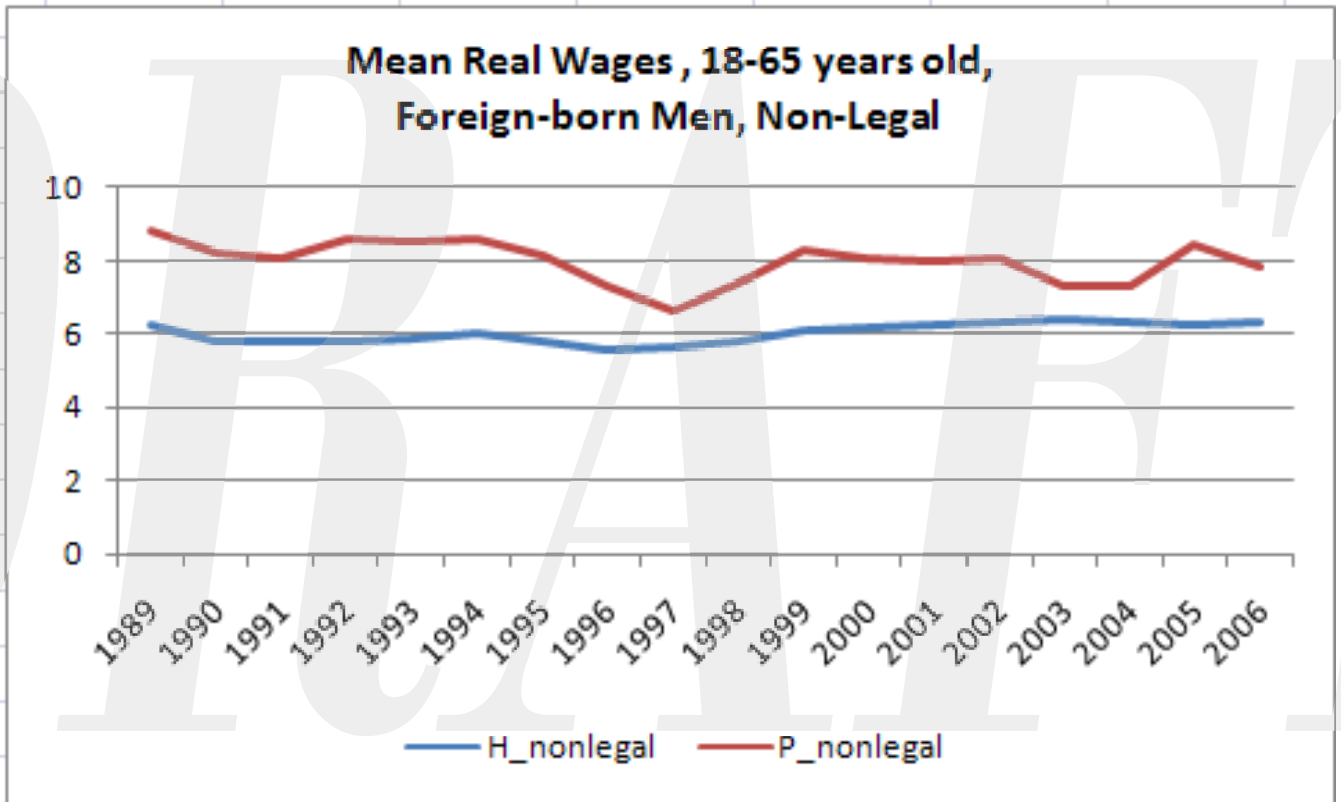

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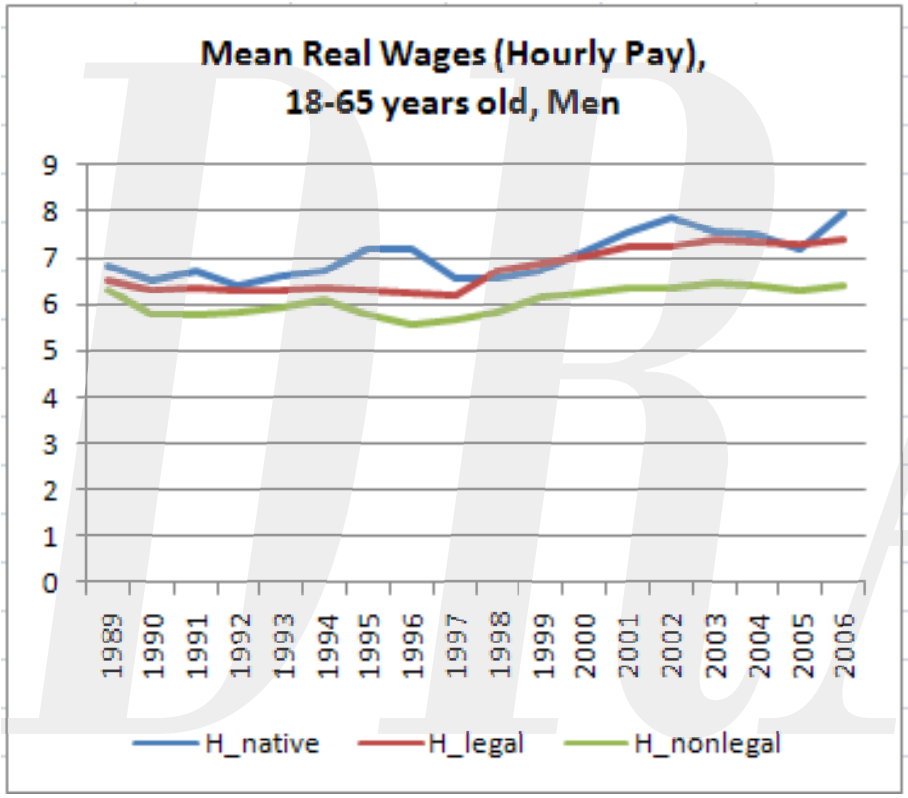

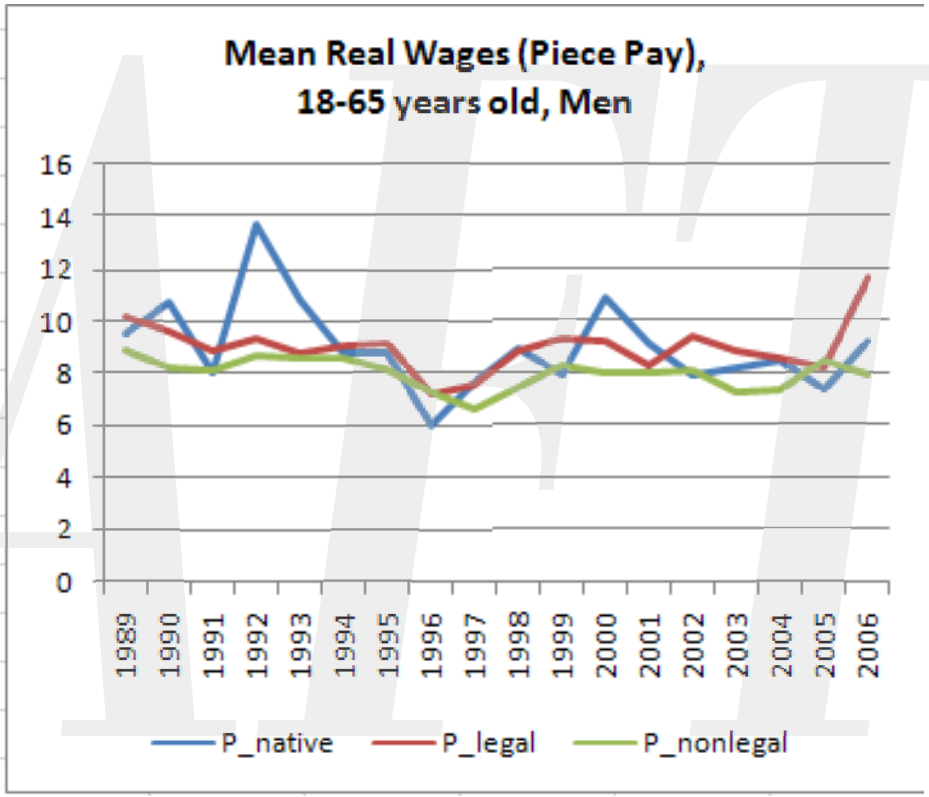

Introduction

- **We posit that, if present, discrimination is more likely among those receiving hourly pay. Why?**
- **Because piece pay is more closely tied to an individual's productivity.**

Relevant Literature

- Lemieux, MacLeod, and Parent (2009) document the increasing use of performance related compensation schemes.
- Piece rate is one type of performance related pay (others are bonuses and commissions).
- Under piece rate pay, compensation is directly related to worker output or productivity; thus, its use should increase worker effort or discourage shirking.

Relevant Literature

- Because of piece rate pay's direct connection to worker productivity, its use may also increase the quality of workers a firm attracts (see e.g., Chen and Edin, 2002).
- That is, high ability workers may be attracted to firms that pay by piece while low ability workers may gravitate to firms that pay by the hour, all else equal.
- Thus, the estimation method we use need to take this self-sorting process into account.

Relevant Literature

- There is clear evidence in the literature that workers in piece rate pay earn higher wages and are more productive compared to those in hourly rate pay (see e.g., Parent (1999) and Lazear (2000)).
- Additionally, Taylor (1992) finds that undocumented workers in California's agriculture sector earn 29% less than legal workers only when employed in primary jobs (e.g., machine operators, foremen, and supervisors).

Relevant Literature

- We build on Golan, Moretti, and Perloff (1999).
- They study the relationship between earnings and workers' legal status (citizen, green card holder, granted amnesty, and undocumented) using 1995 NAWS data.
- For the Midwest region (the only region included in the paper), the piece (hourly) rate regression has 17 (89) observations. Because of the regional approach, their samples are small; thus, they use generalized maximum entropy (GME) estimation.

Relevant Literature

- **Their GME estimates show that among piece rate earners, citizens and those granted amnesty earn higher rates than undocumented workers.**
- **And, among the hourly rate earners, green holders earn lower rates than undocumented workers.**

Methodology

- **What we have done.**
- **We estimate a probit model (hourly=1) and a wage equation accounting for possible selection into hourly/piece rate pay.**
- **Our wage regression estimates provide insights into these issues:**
- **1. Among U.S.-born crop workers, are there systematic differences in pay between those in hourly and piece rate pay? How about among the foreign-born-legal and foreign-born-undocumented crop workers?**
- **2. Among those in hourly rate pay, are there systematic differences in pay between U.S.-born and foreign-born crop workers? How about among those in piece rate pay?**

Methodology

$$y = \alpha_0 + \alpha_1 * Hourly + \alpha_2 * (Foreign-born, legal) + \alpha_3 * (Foreign-born, undoc)$$
$$+ \alpha_4 * (Hourly * Foreign-born, legal) + \alpha_5 * (Hourly * Foreign-born, undoc) + X\beta + e$$

Methodology

- **Planned extensions.**
- **Part A. Estimate a probit model (hourly=1) and two wage equations (one for each compensation type).**
- **This approach should provide clues as to whether an individual's legal status affects wages differentially depending on the method of compensation, without assuming the same coefficient estimates for all other regressors (as our current approach does).**
- **We expect an individual's legal status to matter more among those in hourly-rate contracts since piece pay is more closely tied to productivity.**

Methodology

- **Planned extensions.**
- **Part B. Allow the coefficients of the probit/wage equations to vary according to an individual's legal status.**
- **For each of these three groups (U.S.-born, foreign-born-legal, foreign-born-undocumented), estimate a probit model and two earnings equations.**
- **The wage gap between two groups (e.g., U.S.-born and foreign-born-legal) among hourly-rate contract workers is decomposed into the characteristics (explained), coefficients (unexplained), and residuals effects.**
- **Do the same for piece-rate contract workers.**

Methodology

- **Planned extensions.**
- **Part B, continued.**
- **Compare the estimated characteristics effect across groups and compensation methods.**
- **We expect the characteristic effects to comprise a larger portion of the wage differentials among workers in piece-rate contracts since it is more closely related to worker productivity.**
- **That is, there is less room for (statistical) discrimination against the foreign-born among those in piece rate pay.**

Data

- National Agricultural Workers Survey (NAWS) Public Access Data.
- Interviews for the survey started in 1988.
- Three interview cycles are done each year (October, February, and July) due to seasonality of agricultural work.
- Data cover fiscal year 1989 to 2006.
- Face-to-face interviews on a random sample of 1,500-3,600 crop workers each year.
- The dataset includes data for 46,566 respondents.
- Trimming procedure: 23,564 individuals

U.S. Immigration Reform: Agricultural Workers

- Immigration Reform and Control Act of 1986 (IRCA)—major illegal immigration reform legislation in the United States.
- Included an amnesty program whereby those in the United States illegally could obtain permanent resident status.
- Two programs:
- Regular program—document had continuously resided in the United States since the end of 1981.
- About 1.6 million legalized under this program, see Rivera-Batiz (1999).

U.S. Immigration Reform: Agricultural Workers

- **Special Agricultural Worker (SAW) program—applied to undocumented farm workers. Had "performed field labor in perishable agricultural commodities in the United States for at least 90 days during the year ending May 1, 1986." (Rivera-Batiz, 1999).**
- **Included in response to concerns raised by US farmers of possible labor shortages in US agriculture sector.**
- **About 1.1 million legalized under this program, see DOL (2000).**

U.S. Immigration Reform: Agricultural Workers

Table 4.2 Percent Distribution of Farm workers by Method of Legalization

Method of Obtaining Legal Status	FY 1989	FY 1990-91	FY 1992-93	FY 1994-95
Citizen	42%	42%	34%	30%
IRCA Applicant	33%	29%	25%	19%
Family Program	1%	3%	6%	7%
Other Work Authorized	7%	7%	4%	3%
Unauthorized	7%	16%	28%	37%
Unknown	11%	3%	2%	2%

Source: NAWS Survey results (DOL, 1997), http://www.doleta.gov/agworker/report/ch4.cfm
IRCA applicant—mostly SAW. Citizens and IRCA-applicant less important over time, as undocumented workers share has gone up.

- **Hours worked last week**

paymethod	25th perc.	mean	median	75th perc.
Hourly rate	40	45.58	45	52
Piece rate	30	36.79	40	45
Total	39	44.09	44	50

Preliminary Results

- **Treatment Model using MLE:**

  1. Wald test shows need to account for self-selection into jobs based on method of pay

  2. Probit Regression (Hourly=1)

  - **Compared to the U.S.-born, foreign-born (both legal and undocumented) workers are less likely to be in hourly pay jobs.**
  - **Coeff. are -0.5018 and -0.5128, respectively and statistically sig. at the 1% level in the probit regression.**
  - **Among the foreign-born, test shows insignificant difference in the likelihood of being in hourly pay jobs between legal and undocumented workers.**

Preliminary Results

$$y = \alpha_0 + \alpha_1 * Hourly + \alpha_2 * (Foreign-born, legal) + \alpha_3 * (Foreign-born, undoc)$$
$$+ \alpha_4 * (Hourly * Foreign-born, legal) + \alpha_5 * (Hourly * Foreign-born, undoc) + X\beta + e$$

Status	hourly	Piece
US-born	α_1	base
Foreign-born, legal	$\alpha_1 + \alpha_2 + \alpha_4$	α_2
Foreign-born, undoc.	$\alpha_1 + \alpha_3 + \alpha_5$	α_3

Preliminary Results

3. Wage Regression

- Hourly coef. (α_1)= **-0.2631**, those in hourly pay receive lower wages, all else equal;
- There's weak evidence of additional "penalty" for foreign-born workers: α_4=**-0.0318** for the foreign-born, legal workers; and, α_5=**-0.0113** for the foreign-born, undocumented workers (weak since both are insignificant).
- But, test shows significant difference in "penalties" among the foreign-born.
- What's the reason for larger additional "penalty" for the legal foreign-born?

Preliminary Results

Status	Hourly	Piece
US-born	α_1	base
Foreign-born, legal	$\alpha_1 + \alpha_2 + \alpha_4$	α_2
Foreign-born, undoc.	$\alpha_1 + \alpha_3 + \alpha_5$	α_3

Status	Hourly		Piece	
U.S.-born	-0.2631	***	base	
Foreign-born, legal	-0.2285	1/	0.0664	**
Foreign-born, undoc.	-0.2524	1/ 2/	0.0220	ns

Qualitative variable statistically sig. at 1% (***) and 5% (**), insignificant (ns).

1/ Interaction between status and hourly dummy (α4 and α5) insignificant.

2/ Significant difference (10% level) in the interaction terms among the foreign-born.

Preliminary Results

3. Wage regression, continued.

- **Education: positive coef.**
- **Speak English: positive coef.**
- **Age, U.S. farm experience, experience with current employer: inverted-U**
- **Latino: negative coef.**
- **Employed by employer who provide monetary bonus and health insurance: positive coef.**
- **Employed by farm labor contractors (FLC): negative coef.**