Is it time to update the NAWS questionnaire? Implications of mismeasuring a fast-growing group of authorized migrant farmworkers

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Background

- The H-2A agricultural guestworker program was established in 1986 to alleviate labor shortage concerns by allowing eligible migrants to fill temporary agricultural jobs in the United States.
- After two decades of initial limited adoption, the utilization of the program across US farms picked up speed.

- Guest workers are still being excluded from the major source of individual-level data for US agricultural labor: The National Agricultural Workers Survey (NAWS).
- We illustrate how the inability of NAWS to measure a fast-growing group of authorized migrant farmworkers could lead to measurement errors in empirical analysis aimed to answer important policy questions.
- We focus on the specific question of "To what extent do authorized and unauthorized immigrant farmworkers compete for similar agricultural jobs."

Data

- We use all the waves of NAWS between 1989 and 2018.
- In addition, we use data on H-2A guestworker VISA issuance from the US Bureau of Consular Affairs and the tabulated values of the Adverse Effect Wage Rates from the US Employment and Training Administration.

Model

- The employer hires a bundle of farmworkers (combining skills levels s, age groups a, and migratory types) to minimize the cost $w'L$ of farm production, modeled as a nested-CES function $F(L)$.

$$\min_{L} w'L \text{ subject to } F(L) \geq Y$$

$$[1] \quad L_{asM} = \left[\beta_{as} L_{asA}^{\mu} + L_{asU}^{\mu}\right]^{1/\mu} \quad \text{(for all } a \text{ and } s\text{)}$$

$$[2] \quad L_{as} = \left[\gamma_{as} L_{asN}^{\delta} + L_{asM}^{\delta}\right]^{1/\delta} \quad \text{(for all } a \text{ and } s\text{)}$$

$$[3] \quad L_{s} = \left[\sum \alpha_{\mathrm{i}} L_{s,a=\mathrm{i}}^{\psi}\right]^{1/\psi} \quad \text{(for all } s\text{)}$$

$$[4] \quad F(L) = A\left[\theta_{s} L_{s=1}^{\phi} + L_{s=2}^{\phi}\right]^{1/\phi}$$

- Manacorda et. al. (2012) suggest to estimate [1] to [4] sequentially, as the predicted output at certain nest allows for identification in the next one.
- For instance, the FOC of the first nest relates the log-wage to the log-hiring of authorized and unauthorized migrant farmworkers.
- The elasticity $\sigma = -1/\phi$ between authorized & unauthorized migrants can be estimated by OLS and used in the estimation of the next nest.

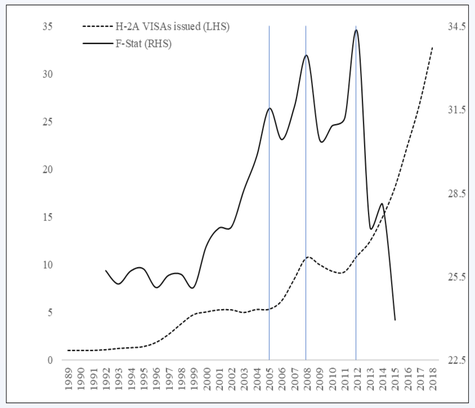
$$\ln \frac{w_A}{w_U} = \phi \cdot \ln \frac{A}{U} + \text{error}$$

- However, if the true number of authorized workers diverges from the number of authorized workers observed in NAWS, $A^{\text{obs}} \neq A^{\text{true}}$, then the OLS estimator will be biased (the errors are not strictly exogeneous).

$$\phi_{\text{biased}} = \mathbb{C}\text{ov}\left(\ln \frac{w_A}{w_U}, \ln \frac{A^{\text{obs}}}{A^{\text{true}}}\right) + \phi_{\text{unbiased}} \cdot \mathbb{V}\text{ar}\left(\ln \frac{A^{\text{true}}}{U}\right) \Big/ \mathbb{V}\text{ar}\left(\ln \frac{A^{\text{obs}}}{U}\right)$$

Estimation Results

- We used a supremum-F break test to investigate whether a break in the elasticity of substitution between authorized and unauthorized immigrants existed.. Figure below shows a break in 2012, which corresponds to the start of exponential growth of H-2A hires.



- Baseline (with no break) elasticity of substitution between authorized and unauthorized migrants equals to 3.0.
- The substitution elasticity drops from 4.0 to 2.0 after the H-2A program picked up speed.

H-2A took off at 2012	First step (1)	Second step (2)	Third step (3)	Fourth step (4)
1. Authorized & Unauthorized migrants				
1.1. Overall	2.8***	2.8***	2.9***	**3.0*** **
1.2. Pre H-2A taking-off	3.5***	3.5***	4.2***	**4.0*** **
1.3. Post H-2A taking-off	2.4***	2.2***	2.1***	**2.0*** **
1.4. Post-Pre Difference	-1.2*	-1.3**	-2.1***	**-1.9*** **
2. US Citizens & Migrants				
2.1. Overall		2.0***	1.8***	**1.8*** **
2.2. Pre H-2A taking-off		1.8***	2.0***	**2.0*** **
2.3. Post H-2A taking-off		2.3***	1.7***	**1.7*** **
2.4. Post-Pre Difference		0.5*	-0.2[=0]	**-0.3[=0]**
3. Age groups			1.7***	**1.8*** **
4. Skills levels				**1.9*** **
5. Obs.	207	414	261	**522**
6. 1. R Sq. Baseline model	0.373	0.653	0.445	**0.434**
6.2. R Sq. Extended model	0.398	0.656	0.479	**0.485**

Conclusions

- The empirical results provide some evidence for an attenuation bias after 2012, the year the H-2A program picked up speed, as the elasticity of substitution drops significantly after 2012.
- Endogenous break tests indicate a statistically significant shift in the elasticity of substitution coefficient corresponding to increasing H-2A trends absent in NAWS.
- With recent spikes in the H-2A utilization across US farm sector, exclusion of this growing authorized farmworker pool from the NAWS data may be causing bias in estimated coefficients used for evaluating important policy questions.

References

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