

Gender and the determinants of international migration from rural Mexico over time

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Three Questions

- ❖ What are the determinants of international migration from rural Mexico and how have they changed over time?
- ❖ Have male and female propensities to migrate changed over time, and what are the gender differences in international migration trends?
- ❖ How do international migration determinants and the impacts of policy and macroeconomic shocks on international migration differ between men and women?

Ulterior Motives

- ❖ Showcase data and econometric challenges in gender-and-international-migration research
- ❖ Share a unique data set from rural Mexico

Starting Point: Gender Differences in Benefits, Opportunity Costs and Costs

Opportunity Cost

$$\rightarrow w_{0igt} = f_{0g}(x_{0igt}; \beta_{0g}) + \eta_{0ig} + \varepsilon_{0igt}$$

Benefit:

$$\rightarrow w_{1igt} = f_{1g}(x_{1igt}; \beta_{1g}) + \eta_{1ig} + \varepsilon_{1igt}$$

Migration Cost:

$$\rightarrow c_{igt} = c_g(x_{cigt}; \gamma_g) + \eta_{cig} + \varepsilon_{cigt}$$

η_{cig} *Time-invariant fixed effects*

ε_{cigt} *Random Errors*

Migration Rule and Probability

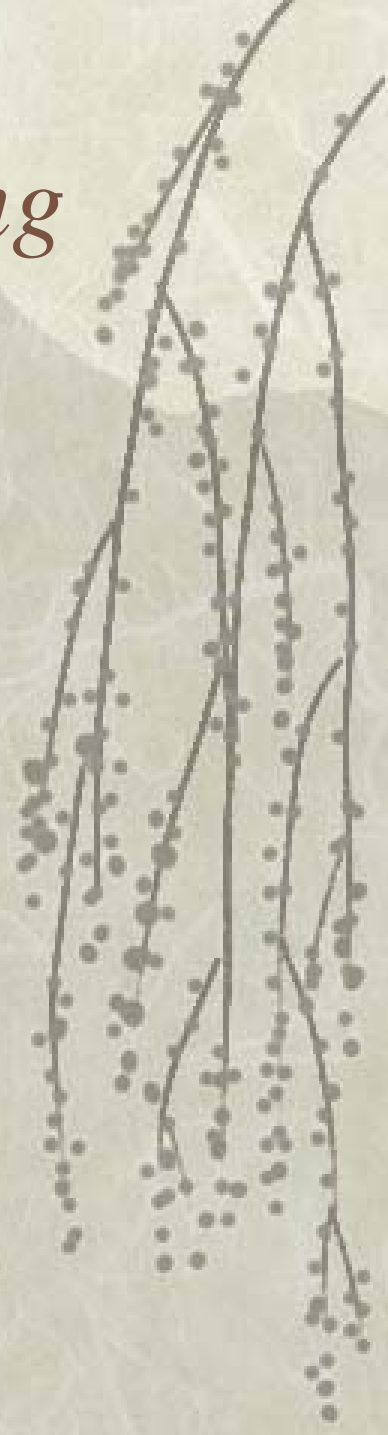
$$W_{1igt} > W_{0igt} + C_{igt}$$

$$\Pr[M_{igt} = 1 | x'_{igt}, \beta_g, \eta_{ig}^*] = \Lambda(\eta_{ig}^* + x'_{igt} \beta_g)$$

$\Lambda(\cdot)$ *Logistic CDF*

The Trouble with Gender Pooling

- ❖ Gender pooling can be justified only if the parameters do not vary by gender
- ❖ Few studies test for pooling or even control for gender, besides including a gender dummy in the list of explanatory variables
- ❖ Potentially major omitted variable problem



The Trouble with Unobservables

- ❖ Unobserved “fixed effects” (FEs, the η s) may be correlated with other variables explaining migration
- ❖ Ignoring the effect of unobservables may contaminate or bias estimates



Examples of Unobservables

- ❖ Innate ability, willingness to take risk, dynamism, etc., correlated with both migration and schooling
- ❖ Aversion to labor market participation by women affects current and past migration (and thus the existence of female migration networks), education, and other variables.
- ❖ Predetermined variables may not be exogenous

Solutions

- ❖ Panel data: Difference away the (time invariant) unobservables
- ❖ Cross-section data: Get best instruments you can to control for unobservables

Mexico National Rural Household Survey of 2003 (ENHRUM^a)

- ❖ UC Davis and El Colegio de Mexico
- ❖ 14 Mexican universities, 100 university students
- ❖ Sample designed with INEGI
- ❖ 2 visits: Community (Summer 2002) and Household (January-February 2003) Surveys
- ❖ 1760 households, 80 villages

Migration Data from the ENHRUM

- ❖ Migration, wage, and remittance data for all family members in 2002
- ❖ Migration and work histories covering 1980-2002 for:
 - All household members
 - A random sample of children living outside the household in 2002 (generally 2 per household)

Comparison with Other Data Sets

- ❖ Detailed economic data, production, income, expenditures (unlike national data sources)
- ❖ Nationally and regionally representative (unlike MMP and village surveys)
- ❖ All rural households (unlike Ejido Survey)
- ❖ Household as well as village (context) variables

2.16 Si alguien ha trabajado en otras partes de México:

¿Qué años trabajó __ viviendo en otra parte de México desde 1980? ¿En qué trabajó y en qué estado? Por un salario y por cuenta propia.

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1. Agr. asalariado
2. No agr. asalariado
3. Agr. cuenta propia
4. No agr. cuenta propia

2.17 Si alguien ha trabajado en los Estados Unidos:

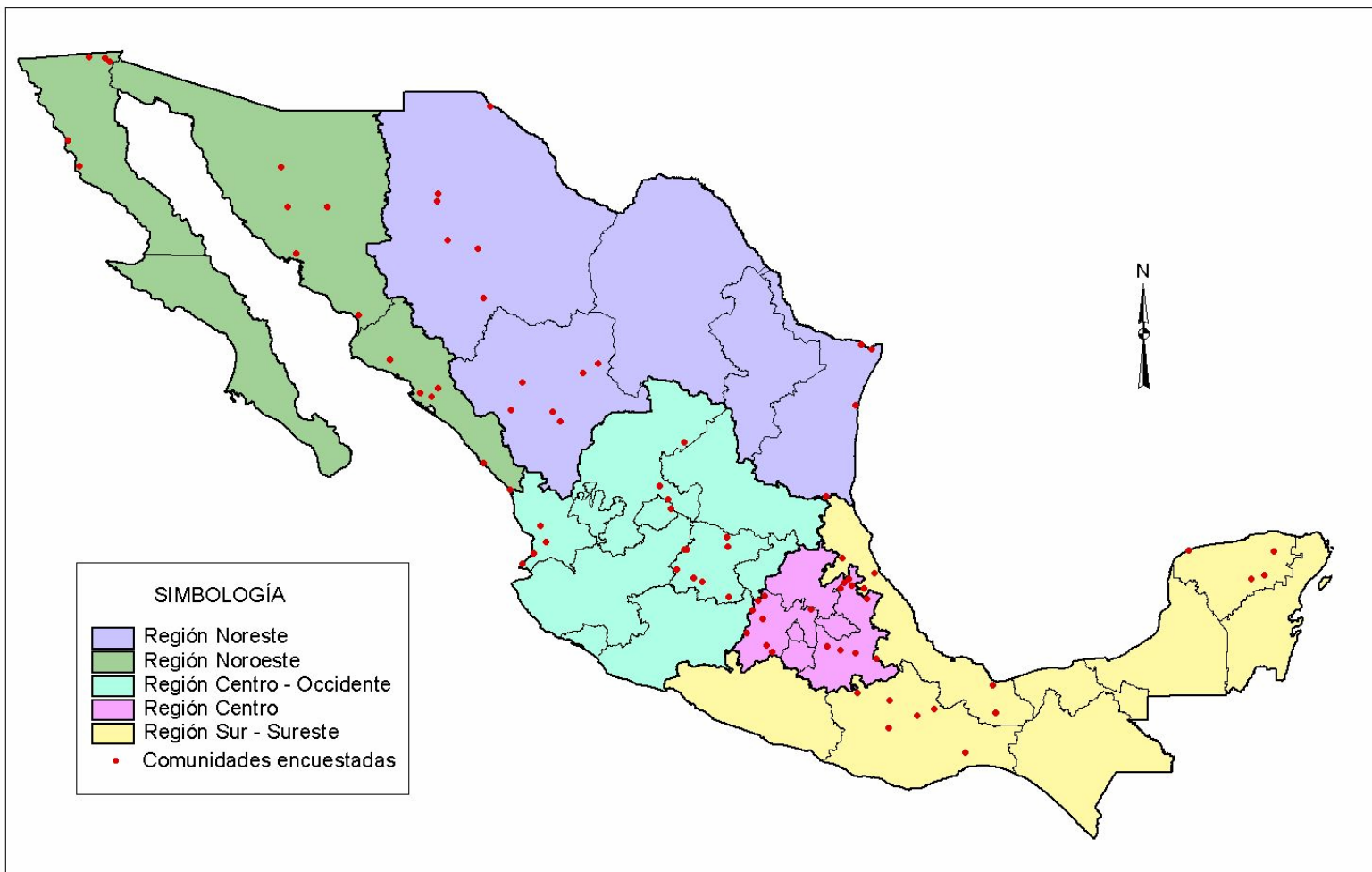
¿Qué años trabajó __ en los E.U. desde 1980? ¿En qué trabajó y en qué estado? Por un salario y por cuenta propia.

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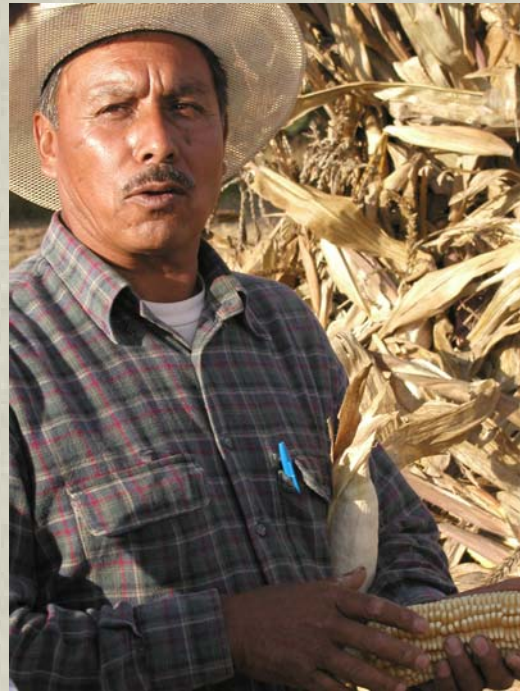
1. Agr. asalariado
2. No agr. asalariado
3. Agr. cuenta propia
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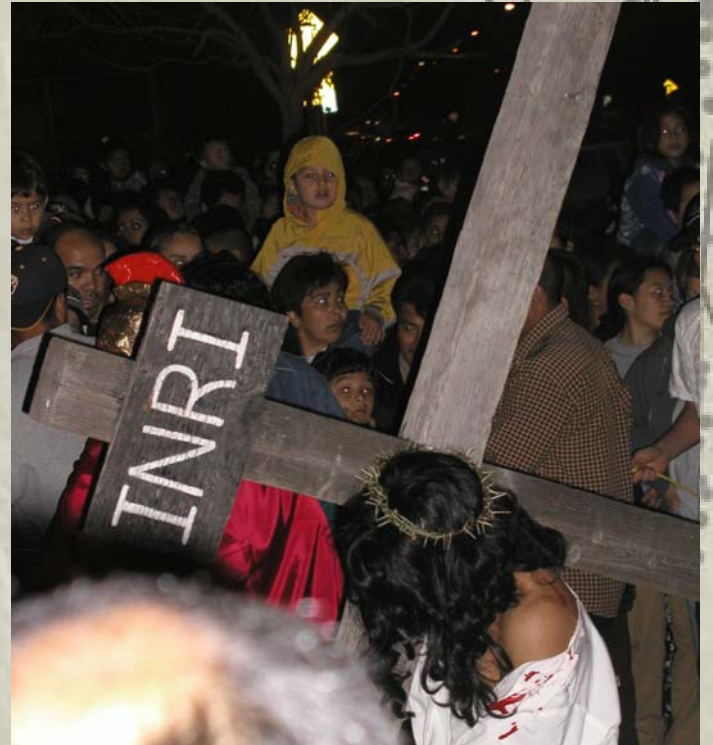
Figure 1. Regional Distribution of Mexico National Rural Household Survey of 2003

ENCUESTA NACIONAL A HOGARES RURALES DE MÉXICO (ENHRUM), 2003
REGIONES Y DISTRIBUCIÓN GEOGRÁFICA DE COMUNIDADES ENCUESTADAS

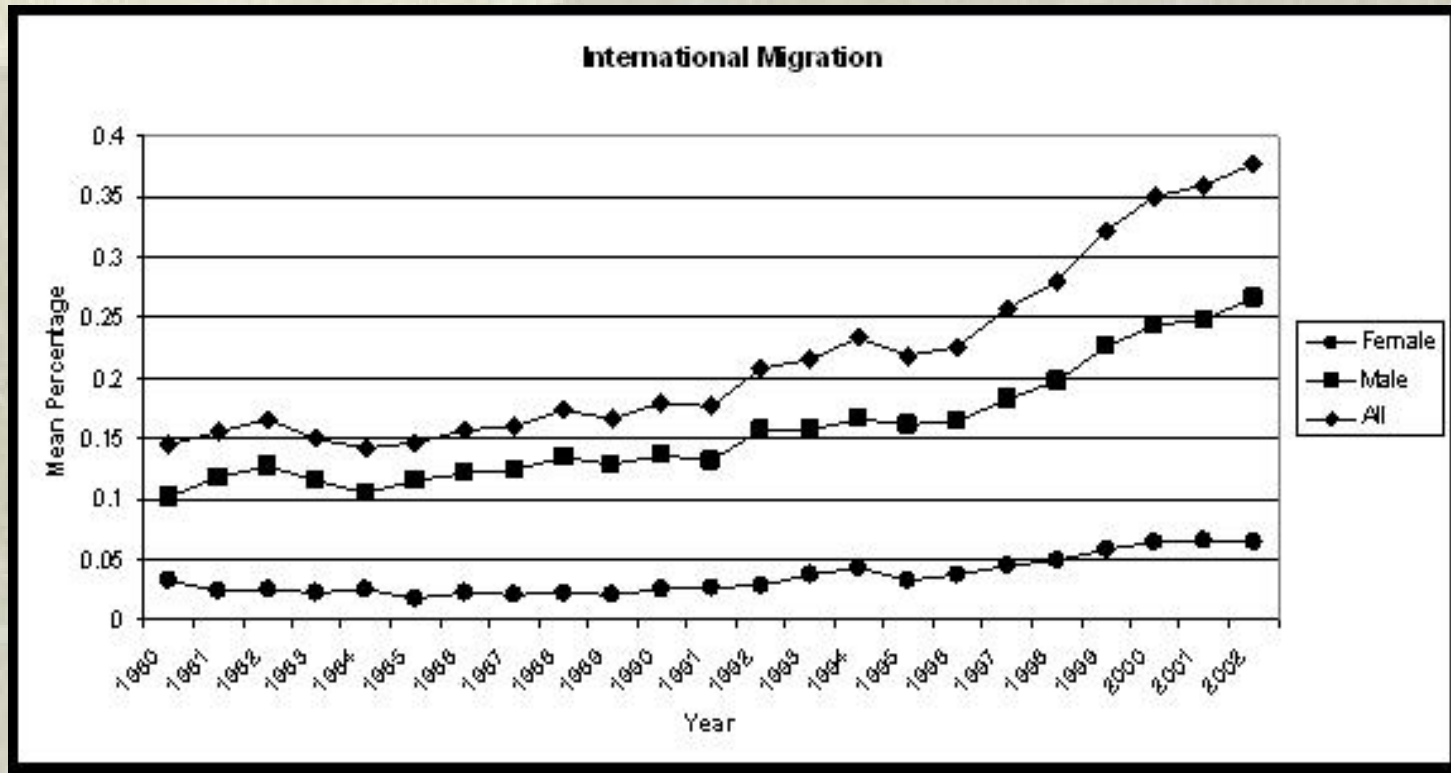


Fuente: Elaborado en el Laboratorio de Análisis Espacial, Coordinación de Servicios de Cómputo, El Colegio de México con base en datos de la ENHRUM, 2003.

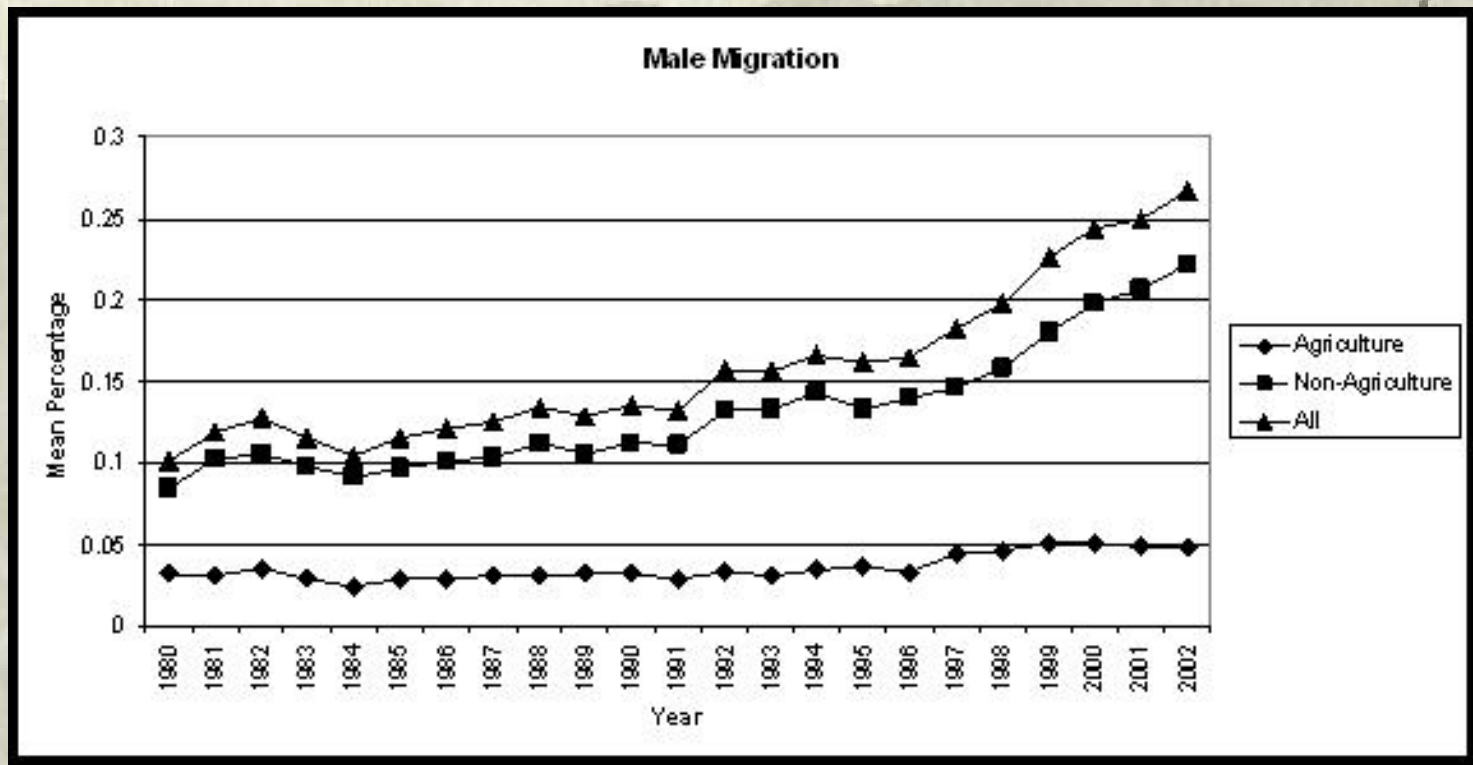




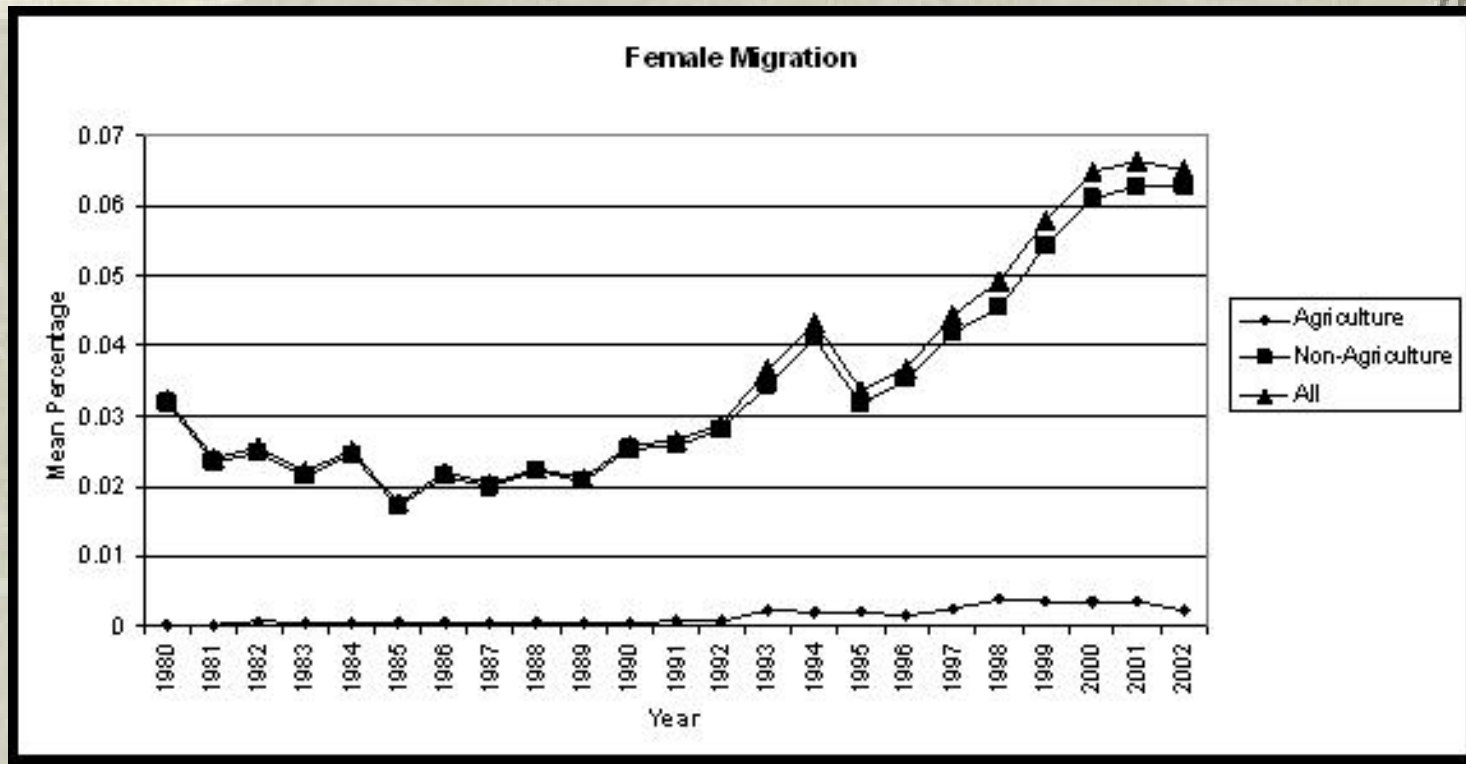
International Migration from Rural Mexico Is Increasing



Some Men Migrate to U.S. Farm Jobs



...But Few Women Do



What Drives International Migration (i.e., What's in X)?

- ❖ Time-invariant variables (fixed effects or human capital, schooling, age)
- ❖ Family migration networks (by gender and destination)
- ❖ Macroeconomic and policy variables
- ❖ Unobservables?

Other Econometric Issues

- ❖ Unbalanced sample
- ❖ Discrete migration choices



Two variants of XTLOGIT in STATA

1. Fixed Effects (FE)

- ❖ Advantages of FE estimation:
 - Controls for time-invariant unobservables
 - Possible for panel logit (but not probit)
 - Consistent, efficient, exploits dynamics in panel data
- ❖ Disadvantages:
 - Cannot estimate the effect of time-invariant explanatory variables on migration behavior (e.g., schooling)
 - ...or time trend and age (difference between t and $t-1$ always 1)

2. Random Effects (RE) Model

- ❖ Advantages: Can estimate effects of trend, age, and time-invariant variables
- ❖ Disadvantages: Cannot control for time-invariant unobservables
- ❖ Comparing FE and RE results gives us a sense of how robust our estimates might be

Gender Differences in International Migration are Significant and Large

**Table 6: Odds ratio for Selected Variables for International Migration
By Gender**

Variable	Fixed Effects		Random Effects	
	1	2	3	4
	Female	Male	Female	Male
Previous Work Exp.				
International	9.95*	4.39*	13.67*	5.86*
International Squared	0.86*	0.92*	0.89*	0.93*
National	0.55	0.90*	0.93	0.85*
National Squared	1.05	1.01*	1.00	1.01*
Family Members that were international migrants in t-1				
Female	5.70*	3.24*	3.93*	2.92*
Male	2.77*	1.70*	2.27*	2.89*
Family Members that were internal migrants in t-1				
Female	1.43	1.22	0.94	1.20
Male	2.57*	0.88	1.31	0.87

* All significant at the 95% level or higher

Policies Affect Women and Men Differently, Too

- ❖ NAFTA decreases male but not female migration
- ❖ US border enforcement expenditures significantly decrease *female* migration but either increase or have no effect on *male* migration probabilities

International Migration Selects Differently on the Human Capital of Men and Women

- ❖ Education increases migration by women
 - ...but only to nonagricultural jobs
 - So the effect of education is not simply to raise women's willingness to migrate
 - The migration must be linked specifically to nonfarm U.S. jobs
- ❖ Education has no effect on the probability of male migration to either sector

Effects of Networks Depend Both on their Gender and Where they Lead

- ❖ Both male and female *nonfarm* networks raise the likelihood of migration to *nonfarm* jobs by males and females
- ❖ ...but the cross-effects of agricultural networks on *nonfarm* migration are not significant for either gender
- ❖ The effect of *internal* migration networks on *nonfarm international* migration is insignificant in all cases for males.
- ❖ ...but for females there is some evidence that *internal nonfarm* networks increase the likelihood of *international nonfarm* (but not farm) migration.

Conclusion: Gender Really Does Matter

- ❖ We did lots of estimates
- ❖ All easily reject the null hypothesis that the determinants of Mexico-to-U.S. migration and their changes over time are gender neutral
- ❖ Findings from male migration often are of little use to understanding female migration, and vice-versa
- ❖ Pooling gives us a “hybrid migrant” that makes little sense at all