Beyond the Mexican Case: A Theoretical, Empirical and Policy Analysis of Central American Migration to the United States

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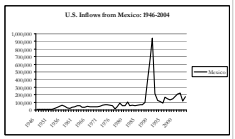
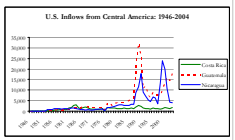
PROJECT DESCRIPTION

The aim of this paper is to both test and extend the existing body of theoretical and empirical work on the determinants of international migration. About a decade has passed since Massey and Espinosa's (1997) detailed account of Mexico-U.S. migration, wherein they found support for social capital formation, human capital formation, and market consolidation in explaining first and subsequent migration from Mexico to the United States. Their work spawned subsequent efforts among scholars to further elucidate the nuances of Mexico-U.S. migration, including the dynamics of origin communities and unique migration streams (Fussell 2004; Lindstrom and Lauster 2001). While the abundance of scholarship on Mexico-U.S. migration is no doubt impressive, it remains to be seen whether the conclusions that have emerged from these studies can be said to hold beyond the Mexico-U.S. case.



Using data from the Latin American Migration Project (LAMP), we analyze first migration to the United States from Costa Rica, Guatemala, and Nicaragua over the period 1965-2000. Like Massey and Espinosa (1997), we employ a rich set of theoretical predictors and multinomial discrete time event history models. We likewise extend the work of Massey and Espinosa (1997) in two respects. First, we do not restrict our sample to men; our doing so represents our attempt to highlight international migration as a highly gendered process (Hondagneu-Sotelo 1994). Second, we provide an explicit treatment of duration dependence and show that researchers must be duly concerned with both the changes in their predictors and the changes in the *effects* of their predictors over time. In our final models, we provide an example that nicely illustrates this distinction.



Data Source: United Nations (2005)

RESEARCH QUESTIONS

1. What's driving Central American migration to the United States?
2. Are the same factors driving Central American Migration to the United States that Massey and Espinosa found to be driving Mexico-U.S. migration, namely - social capital formation, human capital formation, and market consolidation?
3. Where and how does gender fit in? Is there a constant gender effect over time? Or does impact of gender vary by, say, the legal status of the migrant (i.e., undocumented or documented)?
4. How do the relevant driving factors play out with respect to one another and with time? Does it make sense that their effects should be considered constant? Or is their evidence for accelerated and/or diminishing returns?
5. The above questions considered, what is "left over" so to speak? Might our residuals be a further indication as to the importance of place when considering the process of international migration?

DATA & METHODS

* Latin American Migration Project (LAMP): http://lamp.opr.princeton.edu
* 3,681 men and women ages 15+ from Costa Rica, Guatemala and Nicaragua between 1965-2000.
  ** 2,763 males (74.83%) and 918 females (24.94%).
  ** 1,408 (35.51%) Costa Ricans, 508 (10.66%) Guatemalans and 1,765 (53.83%) Nicaraguans.
  (note: percentages are weighted)
* 93,614 person years.
  ** 67,819 (72.13%) male and 25,795 (27.87%) female person years
  ** 35,447 (35.66%) Costa Rican, 12,317 (10.29%) Guatemalan and 45,850 (54.04%) Nicaraguan person years.
  (note: percentages are weighted)
* Outcome variable: Event of first migration to the United States
  ** Competing risks of:
    *** Undocumented migration vs. no migration
    *** Documented migration vs. no migration
* Undocumented first migration:
  ** Log rank tests reveal:
    *** Statistically significant difference in the baseline hazard functions for men and women.
    *** Statistically significant differences in the baseline hazard functions for Costa Ricans, Guatemalans and Nicaraguans.
* Documented first migration
  ** Log rank tests reveal:
    *** No statistically significant difference in the baseline hazard functions for men and women.
    *** Statistically significant differences in the baseline hazard functions for Costa Ricans, Guatemalans and Nicaraguans.
* Method:
  ** Discrete time event history models for competing risks.
  ** Also known as multinomial event history models; proportional odds models.
  ** See Singer and Willet (2003) and Yamaguchi (1991).

KEY MEASURES

Sex……	Sex of respondent (reference category: female)
Country of origin……..	Country of origin (reference category: Nicaragua)
Age 15-49……..	Between ages 15 & 49 (reference category: 50+)
Labor force experience……	Number of years actual labor force experience
Education……..	Number of years of school completed
Visa availability……..	Legal immigration divided by sum of legal and gross entries
Expected wage ratio……..	Predicted ratio from data on home & US wages
Real interest rate……	Interest rate minus inflation rate
Foreign liabilities……	Rate of change in foreign liabilities of monetary authority
Migrant siblings……	Number of siblings with US migration experience
Period 1965-1980……..	Year 1965-1980 (reference category: 1981-2000)

*Various interactions (see results from interactive models below)

RESULTS: ADDITIVE MODELS

Additive Models: First Migration to the United States in Year $t + 1$ from Costa Rica, Guatemala, and Nicaragua (1965-2000)

	Model 1		Model 2		Model 3		Model 4	
Undocumented Migration	Log Odds	Relative Risk	Log Odds	Relative Risk	Log Odds	Relative Risk	Log Odds	Relative Risk
Analysis time	0.154 *	1.166	0.246 *	1.279	0.107 *	1.205	0.160 *	1.173
Analysis time squared	-0.005 *	0.995	-0.004 *	0.996	-0.004 *	0.996	-0.003 *	0.997
Sex	1.374 *	3.951	1.184 *	3.267	1.124 *	3.078	1.218 *	3.381
Costa Rica	-0.934 *	0.393	-0.961 *	0.382	-0.543 *	0.581	-0.314	0.731
Guatemala	0.275 *	1.314	0.282 *	1.326	-0.044	0.957	0.612 *	1.845
Ages 15-49			0.725 *	2.064	0.942 *	2.564	0.790 *	2.203
Labor force experience			-0.114 *	0.892	-0.088 *	0.916	-0.091 *	0.913
Education			0.013 †	1.013	0.010	1.010	-0.004	0.996
Visa availability					-2.700 *	0.067	-2.412 *	0.090
Wage ratio							0.148 †	1.160
Real interest rate							0.000 *	1.000
Foreign liabilities							0.022 *	1.022
Migrant siblings							0.644 *	1.904
Constant	-7.777 *		-8.091 *		-5.770 *		-7.607 *	
Documented Migration	Log Odds	Relative Risk	Log Odds	Relative Risk	Log Odds	Relative Risk	Log Odds	Relative Risk
Analysis time	0.024 *	1.025	0.102 *	1.108	0.083 *	1.086	0.081 *	1.084
Analysis time squared	-0.001 †	0.999	-0.001 *	0.999	-0.001 *	0.999	-0.001 *	0.999
Sex	0.092	1.096	-0.072	0.931	-0.086	0.918	-0.048	0.953
Costa Rica	0.385 *	1.469	0.210 *	1.363	0.446 *	1.562	-0.022	0.978
Guatemala	-0.287 *	0.751	-0.155	0.857	-0.287 *	0.750	-0.207 *	0.813
Ages 15-49			-0.899 *	0.407	-0.837 *	0.433	-0.974 *	0.378
Labor force experience			-0.076 *	0.927	-0.068 *	0.935	-0.068 *	0.934
Education			0.070 *	1.073	0.069 *	1.072	0.061 *	1.062
Visa availability					-0.954 *	0.393	-0.847 *	0.429
Wage ratio							0.207 *	1.230
Real interest rate							0.000 *	1.000
Foreign liabilities							0.003	1.003
Migrant siblings							0.511 *	1.667
Constant	6.333 *		-5.697 *		-5.184 *		-5.642 *	
Log pseudo-likelihood	-14877.40		-14458.33		-14315.44		-13730.26	
Chi Square	628.05 *		1466.33 *		1751.98 *		2906.44 *	

* p<.05; † p<.10

RESULTS: INTERACTIVE MODELS

Interactive Models: First Migration to the United States in Year $t + 1$ from Costa Rica, Guatemala, and Nicaragua (1965-2000)

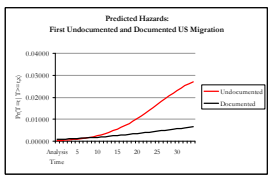
	Model 5		Model 6		Model 7		Model 8	
Undocumented Migration	Log Odds	Relative Risk	Log Odds	Relative Risk	Log Odds	Relative Risk	Log Odds	Relative Risk
Analysis time	0.171 *	1.186	0.019	1.019	-1.136 *	0.321	-1.180 *	0.307
Analysis time squared	-0.004 *	0.996	-0.004 *	0.996	-0.005 *	0.997	-0.003 *	0.997
Sex	1.240 *	3.454	1.227 *	3.409	1.349 *	3.854	1.340 *	3.819
Ages 15-49	0.771 *	2.163	0.850 *	2.339	0.895 *	2.447	1.039 *	2.826
Labor force experience	-0.092 *	0.913	-0.089 *	0.915	-0.085 *	0.919	-0.073 *	0.930
Education	-0.004	0.996	-0.004	0.995	0.030 *	1.031	0.032 *	1.033
Visa availability	-2.524 *	0.080	-2.397 *	0.091	-2.511 *	0.081	-1.611 *	0.200
Wage ratio	0.251 *	1.285	-1.079 *	0.340	-1.342 *	0.261	-0.563 *	0.569
Real interest rate	0.000 *	1.000	0.000 *	1.000	0.000 *	1.000	0.000 *	1.000
Foreign liabilities	0.021 *	1.021	0.022 *	1.022	0.021 *	1.021	0.019 *	1.019
Migrant siblings	0.641 *	1.899	0.632 *	1.881	0.679 *	1.973	0.683 *	1.980
Analysis time * Costa Rica	-0.050 *	0.951	-0.199 *	0.828	0.955 *	2.598	1.074 *	2.926
Analysis time * Guatemala	0.032 *	1.032	0.033 *	1.033	1.250 *	3.493	1.347 *	3.844
Analysis time * wage ratio			0.052 *	1.053	0.430 *	1.537	0.444 *	1.558
Costa Rica * wage ratio			0.621 *	1.859	0.771 *	2.162	0.457 *	1.580
Guatemala * wage ratio			-0.079	0.924	-0.104	0.902	0.142	1.153
Analysis time * Costa Rica * wage ratio					-0.589 *	0.678	-0.414 *	0.661
Analysis time * Guatemala * wage ratio					-0.411 *	0.663	-0.459 *	0.632
Period 1965-1980							-1.141 *	0.319
Constant	-7.805 *		-4.182 *		-5.901 *		-6.359 *	
Documented Migration	Log Odds	Relative Risk	Log Odds	Relative Risk	Log Odds	Relative Risk	Log Odds	Relative Risk
Analysis time	0.106 *	1.111	0.078 *	1.081	0.267 *	1.306	0.261 *	1.298
Analysis time squared	-0.001 *	0.999	-0.001 *	0.999	-0.001 *	0.999	-0.001 *	0.999
Sex	-0.028	0.972	-0.048	0.953	-0.062	0.940	-0.068	0.934
Ages 15-49	-1.012 *	0.363	-0.936 *	0.392	-0.952 *	0.386	-0.899 *	0.411
Labor force experience	-0.071 *	0.931	-0.066 *	0.936	-0.067 *	0.935	-0.063 *	0.939
Education	0.059 *	1.061	0.062 *	1.064	0.057 *	1.059	0.055 *	1.057
Visa availability	-0.841 *	0.431	-0.916 *	0.400	-0.921 *	0.398	-0.589 *	0.555
Wage ratio	0.511 *	1.365	-0.293 *	0.746	-0.279 †	0.757	-0.079	0.924
Real interest rate	0.000 *	1.000	0.000 *	1.000	0.000 *	1.000	0.000 †	1.000
Foreign liabilities	0.002	1.002	0.003	1.003	0.003 †	1.003	0.002	1.002
Migrant siblings	0.496 *	1.642	0.456 *	1.642	0.487 *	1.628	0.487 *	1.627
Analysis time * Costa Rica	-0.024 *	0.976	-0.068 *	0.935	-0.254 *	0.776	-0.249 *	0.780
Analysis time * Guatemala	-0.017 *	0.983	-0.035 *	0.966	-0.821 *	0.440	-0.841 *	0.431
Analysis time * wage ratio			0.009 *	1.009	-0.054 *	0.947	-0.058 *	0.943
Costa Rica * wage ratio			0.358 *	1.431	0.348 *	1.417	0.259 *	1.296
Guatemala * wage ratio			0.065	1.067	0.014	1.014	0.089	1.093
Analysis time * Costa Rica * wage ratio					0.064 *	1.066	0.064	1.066
Analysis time * Guatemala * wage ratio					0.321 *	1.379	0.329 *	1.389
Period 1965-1980							-0.447 *	0.639
Constant	-6.105 *		-4.625 *		-4.570 *		-5.126 *	
Log pseudo-likelihood	-13712.47		-13679.50		-13642.30		-13600.19	
Chi Square	2958.00 *		3023.87 *		3098.25 *		3182.53 *	

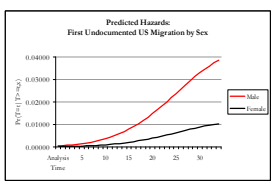
* p<.05; † p<.10

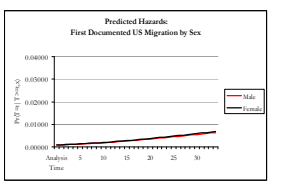
KEY FINDINGS

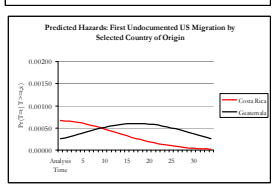
1. We more or less replicated the work of Massey and Espinosa (1997) in our additive models, but of course applied to the countries of Costa Rica, Guatemala and Nicaragua. In Model 4, for instance, the signs for each of the theoretical predictors – expected wage ratio, real interest rate, foreign liabilities, and migrant siblings – are all significant and in the expected direction.
2. Turning to our interactive models, we begin to see the picture get considerably more complicated. The interactions between analysis time and each country of origin dummy are significant. This is as it should be.
3. We then experiment with the expected wage ratio. Massey and Espinosa (1997) picked up a weak positive effect at best. However, two- and three-way interaction terms show that the expected wage ratio continues to be at play and, moreover, that the effects differ by undocumented and documented migration. With respect to the former, we see that the effect of the expected wage ratio has declined over time in both Costa Rica and Guatemala relative to Nicaragua. The opposite is the case where documented migration is concerned.
5. Finally, Model 8 brings in a simple period effect, something we discussion in the conclusion of this poster.

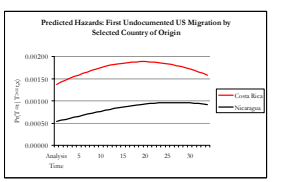
PREDICTED HAZARDS

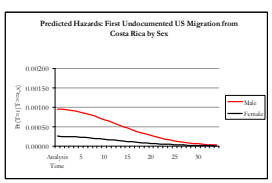


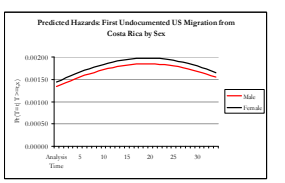












DISCUSSION, CHALLENGES & NEXT STEPS

1. The period effect in Model 8 seemingly warns us that our models are incomplete. This simple period effect is intended to be a rough catch for the periods of war and unrest in both Guatemala and Nicaragua. The Guatemalan Civil War ran from 1960-1996. Nicaragua experienced profound political changes with the Sandinista Revolution which arguably reached its apex in 1979.
2. As a methodological issue, the models developed in this poster are premised on a non-traditional risk set. While we "start the clock" in 1965 for those ages 15 or older, we also allow additional persons to enter the risk set when they turn 15. While the notion of both increments and decrements is more realistic, it is also more difficult to model, especially that of duration dependence.