The Impact of Migration and Remittances on Distribution and Sources Income: The Mexican Rural Case.

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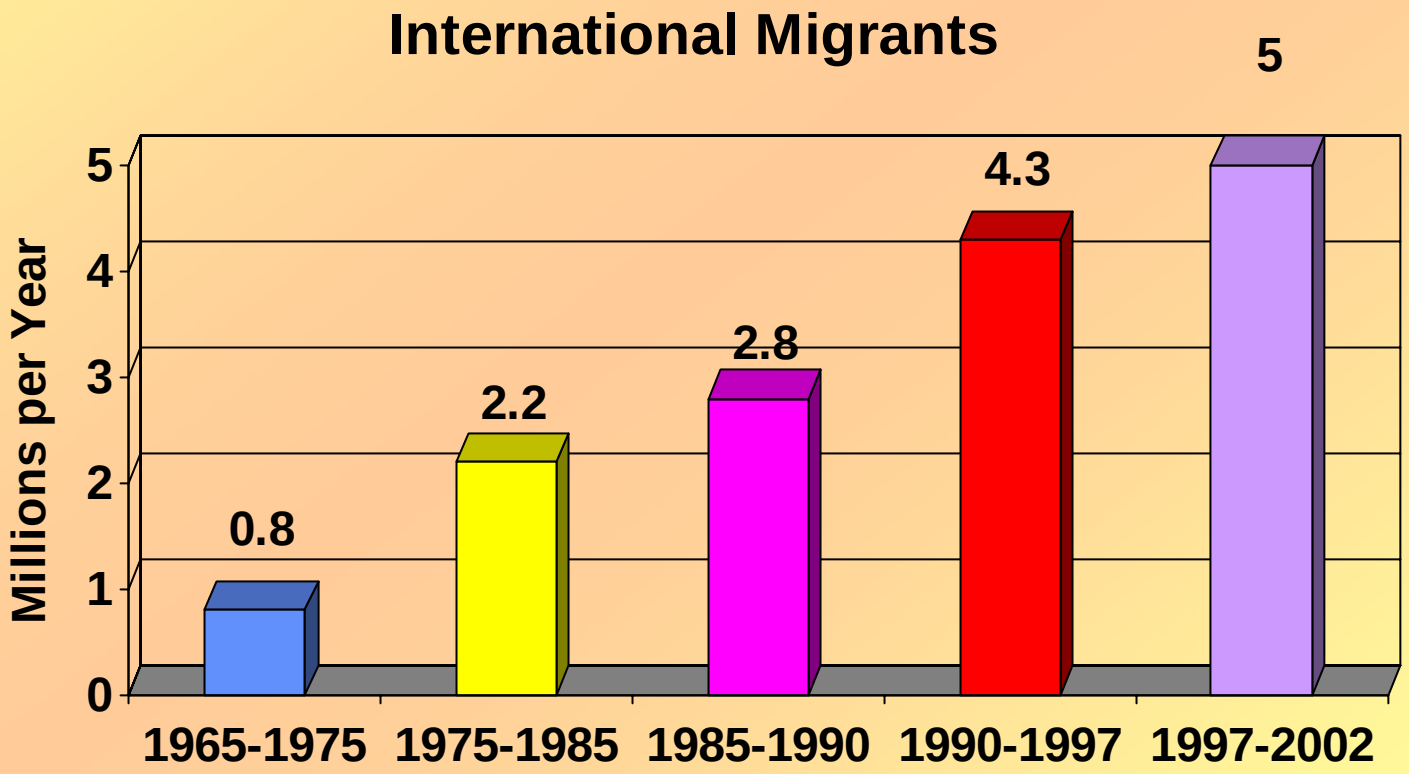
July 6th, 2005

MOTIVATION

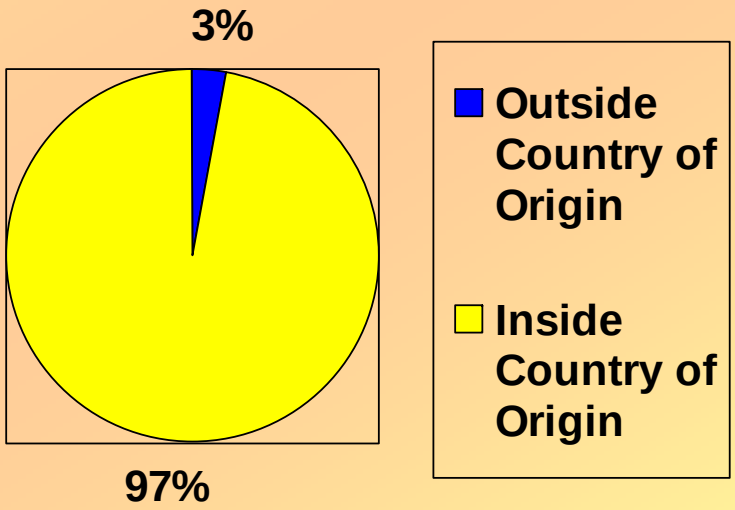
- Trends in International Migration
- Remittances as a significant source of income in México
- Theories of International Migration

Increasing International Migration

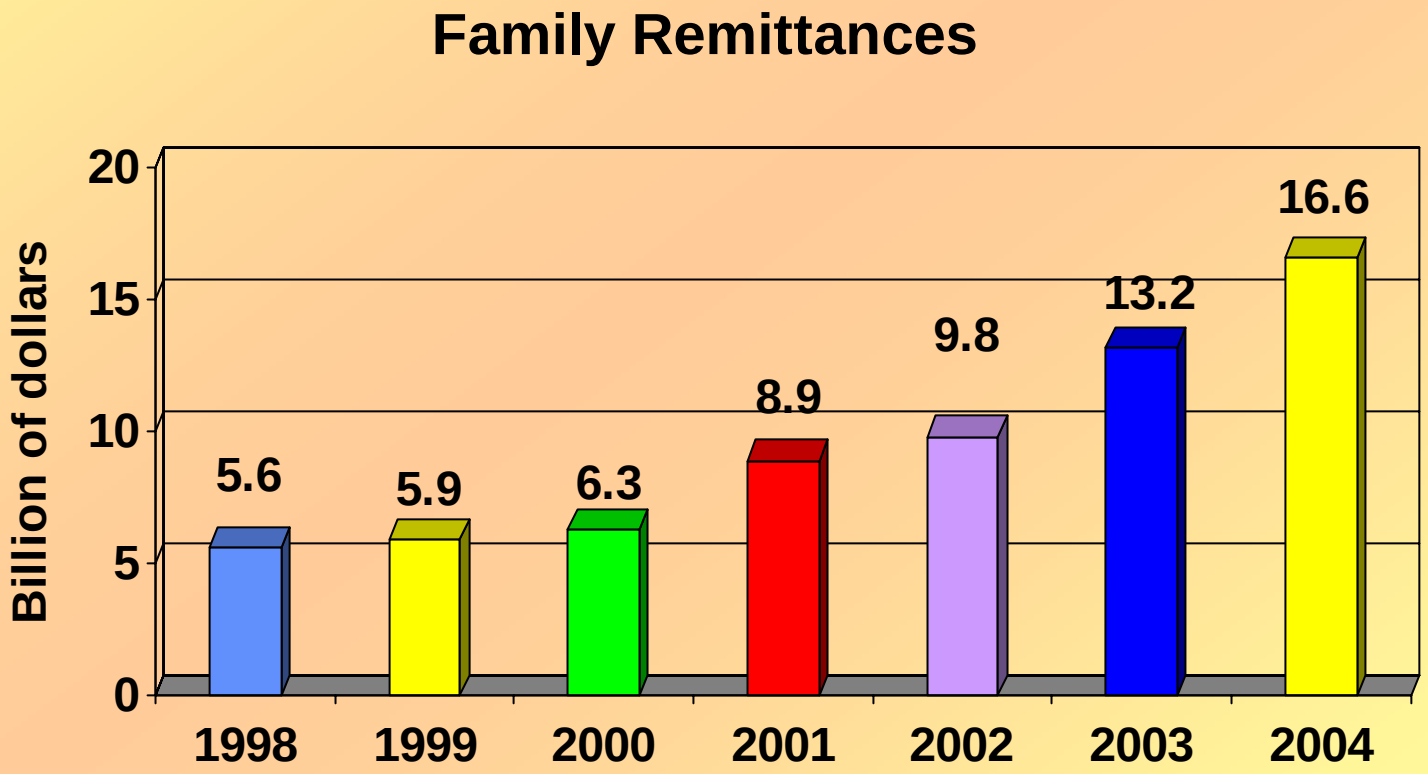


World Migration Propensities

- Approximately 1 in 33 people live outside their country of citizenship or birth.
- That is 3% of the world's population.
- And 97% stay in their countries of origin.



Increasing Mexican Remittances



Migration Theories

"Classical" Models: Labor Demand Drives Migration

Model	What Determines Migration?	Impacts on Rural Economy	Policies to Reduce Migration
Classical: Lewis (1954)	Urban Labor Demand (given perfectly elastic supply of rural labor, thus constant urban wage)	None (Marginal product of migrants' labor is zero in rural sector)	NA (Migration needed to transfer labor to modern sector.)

"Neoclassical" Models: Wages Drive Migration

Model	What Determines Migration?	Impacts on Rural Economy	Policies to Reduce Migration
Neoclassical: Jorgensen (1967)	Migrate if: $w_u > w_r + \delta$	None at household level (wage is fixed), but may lead to increase in rural wages by reducing supply of rural labor; wage changes may induce labor-saving technology change.	NA (Labor markets will equilibrate through migration.)

w_u=urban wage; w_r=rural wage; δ=migration costs

Todaro Model: Expected Incomes

Model	What Determines Migration?	Impacts on Rural Economy	Policies to Reduce Migration
Neo-Neoclassical: Todaro (1969)	Migrate if: $p_u \bar{w}_u > p_r w_r + \delta$	Same as Neoclassical; if $p_r<1$, out-migration may reduce rural unemployment.	Rural (not urban) employment generation projects.

$p_u(p_r)$: Probability of finding an urban (rural) job

Human capital characteristics shape expected gains from migration

…so wages and employment probabilities are different for different people

Variables Affecting Gains from Migration

- Education
- Work experience
- Migration experience
- Networks of contacts at migrant destinations
- Farm assets and other variables affecting the “opportunity cost” of migrating

New Economics of Labor Migration

(Stark (1982); Taylor and Martin (2000))

What Determines Migration?	**•Lack of access to capital and income insurance** **•Migrants act as "financial intermediaries"** **•Missing labor markets may discourage migration.**

New Economics of Labor Migration

Impacts on Rural Economy	**•Migrant remittances stimulate production by loosening capital and risk constraints on investments.** **•Labor lost to migration may reduce production if good substitutes for migrants' labor are not available.**

New Economics of Labor Migration

Policies to Reduce Migration	**•Creation of credit and insurance markets** **•Social security for rural households** **•Reduction of transaction costs in rural markets**

OBJECTIVE

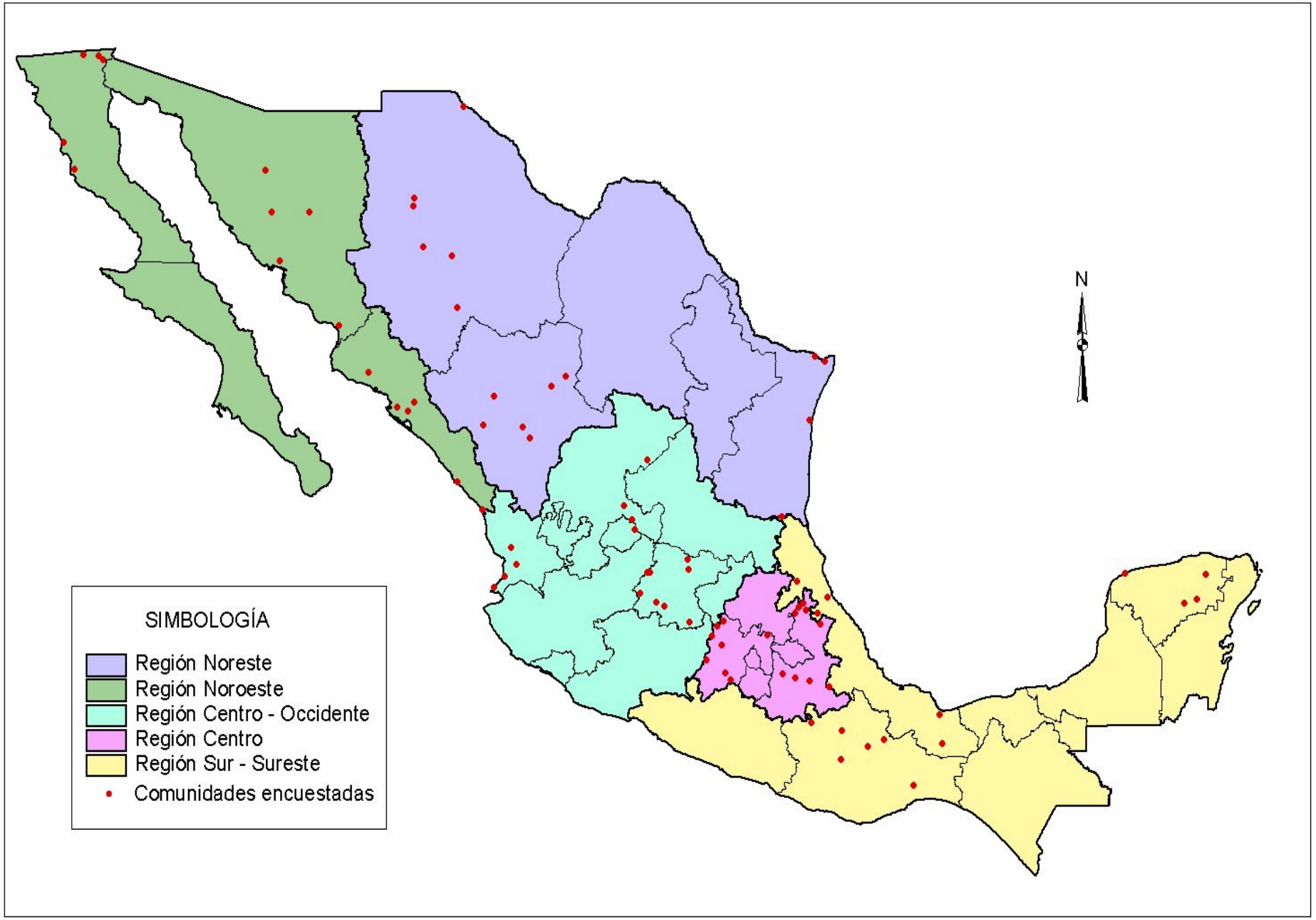
To use the data from a new Mexican rural survey in order to determine the impact of migration and remittances on inequality and income sources

The 2003 México National Rural Household Survey

ENHRUM

ENHRUM represents the first effort to obtain detailed production, income, migration, remittances, time use and expenditure data, generalizable across the entire rural Mexican economy

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.

Households have low levels of schooling and assets

	Mean	Standard Deviation	Min	Max
Socio-Demographic Variables				
Household Size	5.8	3.02	1	13
Age of Household Head	48.6	16.11	15	95
Schooling Household Head	4.5	3.74	0	20
Schooling All Individuals	**5.5**	2.48	0	16.6
Household Physical Assets				
Landholdings (Hect)	**4.80**	25.08	0	538
Livestock	**2.76**	**13.16**	**0**	**252**
Average Tractors per Household	**0.05**	0.21	0	2

Hoseholds also have low per-capita Income

Region	Household Average Income (USD)	Per-Capita Average Income (USD)	Gini Coefficient
South-South East	2740	605	0.55
Center	4828	905	0.52
Center-West	5235	978	0.49
Northeast	5435	1298	0.66
Northwest	8784	1932	0.54
Total	***5347***	1363	***0.57***

…and the Gini coefficient for assets is very high

Human, Physical and Migration Assets	
Asset	***Gini***
Household Head Schooling	0.61
Household Average Schooling	**0.25**
Landholdings (Hect)	0.85
Large Animals	**0.90**
Tractors	**0.95**
Farm Machinery	**0.89**
US Migrants	**0.90**
Internal Migrants	**0.84**
Total Migrants	0.79

Source: ENHRUM,2003

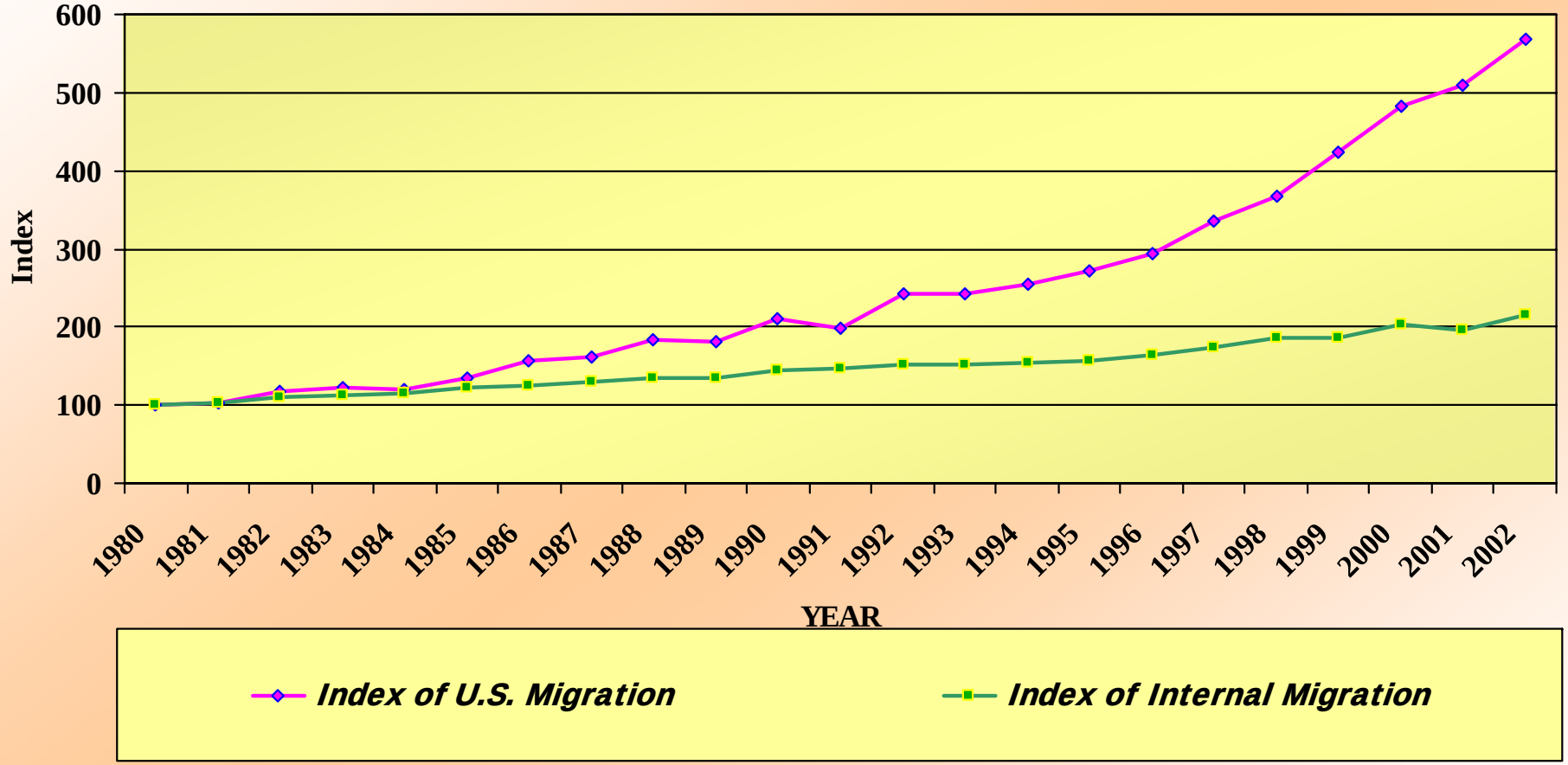
With high levels of inequality in assets and low levels of income, households have to diversify

Composition of Household Income	**Percentage of Households that practice this Activity-Income**	**TOTAL 5346.5 USD**
Salaries and Wages	**69.6%**	**54.1%**
Agricultural	36.8%	13.0%
Non-agricultural	46.8%	41.2%
Farm Production Activities	**65.7%**	**18.2%**
Livestock (Small and Large)	54.0%	3.7%
Staples	34.4%	2.4%
Commercial Crops & Plantations	16.7%	10.0%
Other agricultural activities	20.5%	2.1%
Renewable Resource Extraction	47.5%	2.3%
Public Transfers	**50.3%**	**4.4%**
Migrant Remittances	**27.4%**	**12.7%**
Internal	13.2%	1.7%
International	16.6%	11.0%
Local non-farm activities	17.4%	8.3%
Commerce	11.5%	6.0%
Services	5.1%	2.2%
Handicrafts	1.9%	0.1%
Total		100.0%

…increasingly they diversify via migration

Variable	Participations	Mean	Standard Deviation	Min	Max
Households with US migrants (%)	16%	-	0.37	-	-
US Migrants per Household		**0.35**	1.04	0	9
Households with Internal migrants (%)	26%	-	0.44	-	-
Internal Migrants per Household		**0.71**	1.58	0	10
Households with migrants (%)	35%				
Total Migrants per household		**1.06**	1.96	0	11

International Migration increased sharply from 1980-2002



What impact did increasing migration have on Mexico's rural economies?

- Two modeling methods were used
  - Analysis of income inequality with Gini coefficient decompositions
  - Econometric estimates of effects of migration and remittances on rural household incomes

Methods

1. Income Source Gini Decomposition

$$G = \frac{2\sum_{k=1}^{K} Cov\left[y_k, F(Y)\right]}{\mu_Y} = \sum_{k=1}^{K} R_k G_k S_k$$

a) how important the income source is with respect to total income (*Sk*)

b) how equally or unequally distributed the income source is (*Gk*)

c) whether or not the income source is correlated with total income (*Rk*)

Example #1: Profits from commercial production

- Important (S_k is large)
- Unequal (High G_k)
- Accrue disproportionately to high income households (R_k is positive and large)

  => increases in commercial profits likely to sharpen rural inequalities

Example #2: Welfare payments (e.g., OPORTUNIDADES)

- Important (S_k is large)
- Unequally distributed (Only the poorest get them, so G_k is large)
- …but negatively related to income (R_k is small or negative)

  => increases in welfare payments should reduce inequality

Gini Decomposition Results

Income Source	Sk	Gk	Rk	Share	Effect
Livestock	0.04	1.70	0.55	0.06	0.22%
Agricultural	0.12	1.13	0.77	0.18	0.57%
Government Transfers	0.04	0.76	0.23	0.01	-0.31%
Internal Remittances	0.02	**0.95**	**0.25**	0.01	**-0.10%**
US Remittances	0.11	**0.94**	**0.69**	0.12	**0.10%**
Wages	0.54	0.69	0.81	0.51	-0.36%
Others	0.13	0.86	0.63	0.12	-0.12%
Total Income	1.00	0.60	1.00	1.00	

2. Econometric Model

Testing the NELM in rural México

Key Hypotheses

If:

- Income is constrained and
- migration, M, and remittances, R, shape income constraints

…then constrained income response, Y, depends on M and R

Model: Some Income Sources Response to Migration and Remittances

$$\overline{Y}_k = \gamma_{0k} + \gamma_{1k} M_n + \gamma_{2k} M_u + \gamma_{3k} R_n + \gamma_{4k} R_u + \gamma_{5k} Z_k + \varepsilon_k$$

Z_k = other (exogenous) variables affecting income sources

ε_k = Stochastic error

Remittances Response to Migration

$$R_i = \alpha_{0i} + \alpha_{1i} M_i + \alpha_{2i} Z_{Ri} + \varepsilon_{Ri} \qquad i = n, u$$

Z_R = other (exogenous) variables affecting remittances

ε_R = Stochastic error

n= Internal

u= International

…And Migration

$$M_j = g_j(\beta; Z_M) + \varepsilon_M$$

with $g(\beta; Z_M) = \exp(\beta_0 + \beta_1 Z_M) + \varepsilon_M$

Z_M = other (exogenous) variables affecting migration

ε_M = Stochastic error

Estimation of Model

- This is a triangular (but not necessarily statistically recursive) equation system. Ordinary least squares may not be efficient.
- The model was estimated using iterative three-stage least squares to exploit information contained in cross-equation error correlations

Econometric Model Results

Results from Migration Equation*

Independent variable	*Specification*			
	US (1990)	MEX (1990)	Dummy US HH Father	Dummy MEX HH Father
Hh Size	**0.185**	**0.207**	**0.186**	**0.207**
Schooling HhH	-0.017	**0.021**	-0.019	**0.021**
HhH EXP	**0.143**	**0.117**	**0.149**	**0.118**
EXPSQ	**-0.001**	**-0.001**	**-0.001**	**-0.001**
Wealth Index	**0.283**	**-0.058**	**0.317**	**-0.067**
Index Squared	**-0.033**	**-0.024**	-0.027	**-0.024**
Livestock	**0.007**	-0.007	**0.008**	-0.007
Tractors	**0.276**	0.182	**0.290**	0.154
Frequency of Transport	-0.010	**0.019**	-0.005	**0.022**
Acc. During Weather Shocks	**0.294**	-0.019	0.200	0.009
Nonagric. Enterprise in Village	-0.106	0.105	-0.153	0.077
Number of Household Migrants in 1990	**0.537**	**0.161**	---	---
Household head's father migrant (Dummy)	---	---	**0.407**	0.020

Impacts of Migration and Remittances on Income Sources*

	Remittances					
Ind. Variable	**International**	**Internal**	**Livestock Income**	**Agricultural Income**	**Wage Income**	**Other Income**
US Migrants	**7673.13**	---	**2526.40**	**9345.64**	-35.61	1666.38
MEX Migrants	---	236.84	-59.29	-1532.09	**-4830.25**	**-2337.95**
MEX Remittances	---	---	**0.73**	1.42	0.93	0.26

CONCLUSIONS

1) *Individuals who migrate to the U.S. do not come from the poorest households*
   - *U.S. remittances increase rural income inequality*

2) *In contrast, internal remittances decrease rural income inequality*
   - *Internal destinations are more accessible to the poor and entail lower risk*

…but migrants are like financial intermediaries

- International and internal migrants provide remittances
- They also positively affect rural production
  - Providing capital to invest
  - Providing income insurance
- More research is needed to disentangle these effects

GRACIAS

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