Day 4: Social Transfers and Safety Nets

New Climate Economy Training Course

World Resources Institute

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Motivation

This presentation will cover social transfers and safety nets, focusing on their distributional (or redistributional) aspects. This presentation is organized as follows.

1. Motivation
2. Social Transfers and Safety Nets
3. Case Study

Antipoverty Policy

At the core of welfare schemes lies a broad set of premises:

- Poverty is a social bad
- Poverty can be eliminated
- Public policies can help do that

This chapter deals with the set of welfare-augmenting public policies concerned with poverty alleviation.

Antipoverty Policy

Social programs have evolved - from a view of poverty as a consequence of personal choice and moral weakness - to a behavioural framework where poverty emerges from the wealth dynamics implied by the external constraints that poor people face.

- Larger scope for public policies
- Treat poverty as a market failure

Antipoverty Policy

While an efficient tax system is key, antipoverty policy in the form of transfers and safety nets is heterogeneous, including:

- Minimum Wages
- Pensions
- Employment and Unemployment Benefits
- Cash and In-Kind Transfers
- Healthcare and Education Public Spending

Antipoverty Policy

Despite cross-country variations, two stylized facts emerge:

- No advanced economy **achieved** low inequality and poverty levels with low social spending
- Countries with **current** high social spending tend to have low inequality and poverty

High spending countries also tend to have other institutional features that contribute to the effectiveness of their policies.

Antipoverty Policy

The "Paradox of Redistribution":[1]

- Large universal welfare systems - on theory less distributive - redistribute the most
- Systems that strongly target the poorest tend to be less distributive

It seems that re distributivity is mediated by the relative size of available redistribution means:

- Countries with selective redistributive policies spend less in redistribution

[1] Korpi and Palme (1998)

Antipoverty Policy

Marx, Salanauskaite, and Verbist (2013), however, shows that the strong link between redistribution and universal provision has declined over time.

Targeting levels and schemes remain a controversial topic, and organizations like the IMF and WB advocate for targeted income support benefits. This is heightened by increasing budget austerity.

Antipoverty Policy

From a design perspective, there are concerns over two aspects of antipoverty policy

- Adequate social safety nets are not affordable
- Adequate social safety nets undermine willingness to work

As for the second concern, accoridng to De Neubourg, Castonguay, Roelen, et al. (2007), empirical evidence does not support this view. Denmark and the Netherlands combine the highest levels of worker and non-worker protections with the highest employment and lowest unemployment levels in the European Union.

Antipoverty Policy

Nordic countries have the most redistributive systems. These are characterized by:

- High spending levels
- Moderate to strong targeting

Reflecting a "targeting within universalism" approach:

- Many people receive benefits
- Poorest receive the most

Antipoverty Policy

Social Insurance:

- Government provided insurance against adverse events
- Eligibility does not depend on current needs
- Worker participation is mandatory, "buy" insurance through payroll taxes
- Eligibility triggered by insured event

Public Assistance:

- Eligibility depends on current needs
- Benefits "phase out" as income increases
- Eligibility often categorical

Antipoverty Policy

Optimal policies care about balancing protection and distortion.
Redistribution policies care about:

- Equity, as redistribution is valued by the government and the beneficiaries
- Efficiency, as redistribution is costly

Means-Tested Benefits

It is the primary form of social welfare in the anglo-saxon countries. It consists of payments available if the individual's income or wealth lies below a certain threshold. Examples of this programs are:

- The US food stamps program
- The UK's Income Support program

Cash Transfers

Low and middle income countries are increasingly including cash transfers in their social protection policies. They consist on a direct payment to an eligible individual or group. Broadly they can be classified in two groups:

- Conditional cash transfers
- Unconditional cash transfers

Cash Transfers

According to Aizer et al. (2016), there is variation in the objectives of transfer programs. Among common goals are:

- Reduce monetary poverty
- Increase educational attainment
  - Mixed evidence regarding effects on learning outcomes
- Health and Nutrition
- Savings, Investment and Production
- Employment
  - Reductions in child and pensioners labor participation

In-Kind Transfers

The US tends to favor In-Kind transfers. Issues with In-Kind transfers are:

- In-Kind transfers can be regarded as paternalistic, as they impose public preferences
- Higher administrative costs than cash transfers
- Corner solutions given by the non-tradable nature of non-cash transfers

Pensions Systems

Pensions provide individuals with income after they retire from the labor force, mainly due to old age. There are several ways to organize pension system. The most common are:

- Basic non-contributory pension
- Mandatory individual accounts
- Provident fund system
- Workers can switch between social insurance system or individual accounts
- Social insurance system

Minimum Wage

Minimum wages represent the hourly price threshold below which individuals may not sell their labor.

- Under perfect competition minimum wages above the equilibrium level negatively affect employment levels
- Under monopsony conditions minimum wages can increase employment
- Empirical evidence is mixed, but tends to find little to no effect of minimum wage hikes on employment

Case Study

This lectures case study will review the following paper:[2]

Only One Tree from Each Seed? Environmental Effectiveness and Poverty Alleviation in Mexico's Payments for Ecosystem Services Program

By Jennifer M. Alix-Garcia, Katharine R. E. Sims, and Patricia Yañez-Pagans. Pubished in the *American Economic Journal: Economic Policy, 2015*

[2] Alix-Garcia, Sims, and Yañez-Pagans (2015)

Introduction

This paper estimates the land cover and poverty reduction impacts of a national-scale environmental payments program in Mexico.

- **REDD:** Reducing emissions from deforestation and forest degradation. Goals set by the United Nations
- **PES:** Payment for ecosystems programs
  - Main goal is environmental protection, but poverty alleviation is often expected
- **PSAH:** Payments for Hydrological Services Program. Federal program that pays private or communal landowners to maintain forest cover under five year contracts. Mexico's take on meeting these goals

Program Design

Once accepted, beneficiaries must maintain forest cover within the enrolled parcel, but are allowed to change land cover in other parts of their property

- Satellite image analysis and/or ground visits are used to randomly verify forest cover on enrolled parcels
- If the program managers finds deforestation due to intentional changes, such as logging or conversion to agriculture or pasture, these parcels are removed from the program and payments stop, whereas if forest loss is due to natural causes, such as fire or pests, payments are reduced

Data

- Land cover data from 2000 to 2012
- Surveyed program beneficiaries and applicants, at the household and communal level

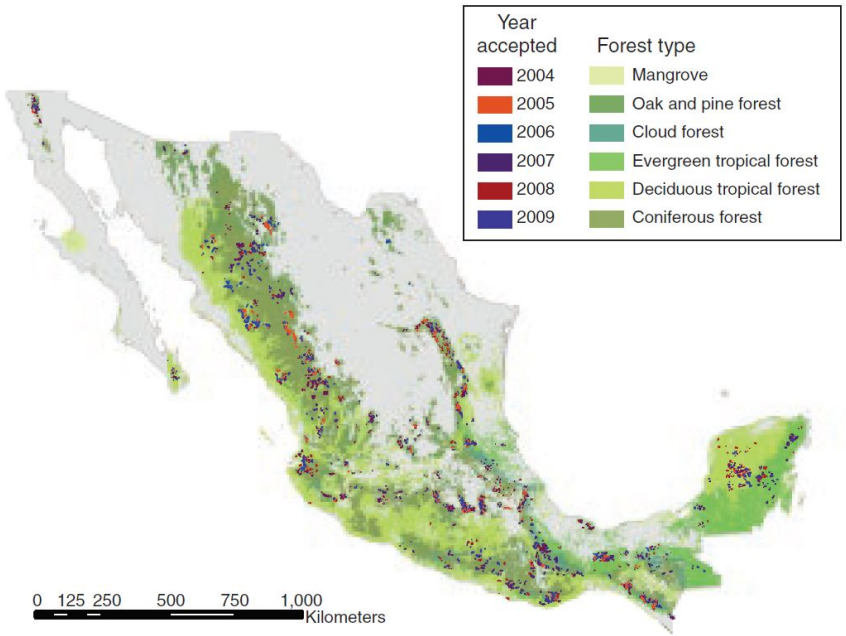

FIGURE 2. PSAH BENEFICIARIES, 2004–2009

Identification Strategy

Panel data for both program beneficiaries and matched rejected applicants control for possible omitted variables that are time invariant as well as for time trends affecting both groups.

- The validity of the estimation strategy relies on the assumption that trends in beneficiary and nonbeneficiary groups would have been the same in the absence of the program.
- Similar pre-program trends for beneficiaries and rejected applicants make this a plausible assumption.

Identification Strategy

TABLE 2—SUMMARY STATISTICS: POINTS WITHIN APPLICANT BOUNDARIES AND OTHER FORESTED POINTS

	All forested areas (1)	Beneficiaries (2)	All rejected applicants (3)	Matched rejected applicants (4)	Normalized difference (1) versus (2) (5)	Normalized difference (2) versus (3) (6)	Normalized difference (2) versus (4) (7)
Slope (degree)	10.3	12.2	11.3	12.3	−0.14	0.07	0.00
	(9.5)	(9.9)	(9.6)	(9.6)			
Elevation (m)	1,161	1,520	1,436	1,568	−0.27	0.06	−0.03
	(867)	(981)	(921)	(930)			
Km to nearest town	38.1	33.5	38.8	33.2	0.13	−0.15	0.01
	(27.2)	(22.1)	(27.0)	(22.1)			
Municipal poverty	0.24	0.29	0.27	0.23	−0.03	0.01	0.03
	(1.02)	(1.12)	(1.13)	(1.09)			
Common property (0/1)	0.60	0.88	0.80	0.85	−0.47	0.16	0.06
	(0.49)	(0.33)	(0.40)	(0.36)			
Overexploited aquifer (0/1)	0.07	0.16	0.12	0.15	−0.19	0.07	0.02
	(0.26)	(0.37)	(0.33)	(0.35)			
Water availability (0–8)	7.18	6.85	6.86	6.83	0.16	0.00	0.01
	(1.31)	(1.67)	(1.53)	(1.61)			
Priority mountain (0/1)	0.07	0.25	0.12	0.19	−0.36	0.24	0.09
	(0.25)	(0.43)	(0.32)	(0.39)			
Protected area (0/1)	0.07	0.12	0.08	0.10	−0.13	0.09	0.05
	(0.26)	(0.33)	(0.28)	(0.30)			
Majority indigenous (0/1)	0.25	0.39	0.25	0.32	−0.21	0.21	0.10
	(0.43)	(0.49)	(0.44)	(0.47)			
Cloud forest (0/1)	0.03	0.09	0.04	0.06	−0.18	0.14	0.09
	(0.17)	(0.29)	(0.20)	(0.23)			
NDVI in 2003 (0–100)	55.5	62.3	57.2	59.4	−0.30	0.23	0.13
	(16.4)	(15.6)	(16.2)	(15.6)			
INE deforestation risk index	2.85	2.48	2.40	2.47	0.19	0.04	0.00
	(1.39)	(1.34)	(1.30)	(1.29)			
Geographic risk index	−1.08	−0.95	−1.12	−1.05	−0.09	0.12	0.04
	(1.07)	(1.00)	(1.10)	(1.09)			
Observations/Sum Nd.	44,104	17,307	18,456	4,489	2.85	1.59	0.66

Notes: Matches are found using 1:1 covariate matching with replacement on the Mahalanobis metric. Exact matches are required within region, tenure type, and application year. Other matched covariates are slope, elevation, municipal poverty, distance to nearest locality with population greater than 5,000, cloud forest, overexploited aquifer, degree of water scarcity, priority mountain, protected natural area, and municipality with majority indigenous population. Normalized difference is the difference in average covariate values, divided by the square root of the sum of variances for both groups (Imbens and Wooldridge 2009). The last row in columns 5–7 gives the sum of the normalized differences across all the covariates.

TABLE 3—SUMMARY STATISTICS: BENEFICIARY AND NON-BENEFICIARY HOUSEHOLDS

	Full sample					
	Common properties			Private properties		
	Beneficiary	Non-beneficiary	Norm. diff.	Beneficiary	Non-beneficiary	Norm. diff.
Food index 2011 (100s pesos)	2.12	2.04	0.07	2.48	2.53	−0.05
Durables index 2007 (10,000s pesos)	1.85	1.63	0.07	4.74	4.28	0.12
Housing index 2007 (10,000s pesos)	9.96	10.06	−0.02	16.79	14.91	0.14
Number of cattle 2007	2.99	4.57	−0.09	19.58	23.24	−0.05
Number of small animals 2007	8.34	6.44	0.06	31.42	12.00	0.10
Elevation (m)	1,602	1,471	0.09	1,289	1,271	0.01
Slope (degree)	9.31	9.91	−0.06	9.11	9.72	−0.06
Distance locality >= 5,000 people (km)	32.24	30.19	0.08	26.75	29.23	−0.10
Municipal poverty 2005	0.72	0.78	−0.04	0.92	0.66	0.18
Area of parcel enrolled (ha)	1,021	1,241	−0.17	103.8	108.0	−0.04
Household size	4.90	4.60	0.09	4.33	3.93	0.14
Member of community	0.65	0.66	−0.003	NA	NA	NA
Days worked FCA 2007	17.55	7.49	0.20	NA	NA	NA
Participated in FCA 2007	0.58	0.41	0.25	NA	NA	NA
Number of observations	590	506		60	54	

	Matched sample		
	Beneficiary	Non-beneficiary	Norm. diff.
Food index 2011 (100s pesos)	2.13	2.01	0.10
Durables index 2007 (10,000s pesos)	1.84	1.43	0.13
Housing index 2007 (10,000s pesos)	9.94	9.85	0.02
Number of cattle 2007	2.82	4.81	−0.10
Number of small animals 2007	8.45	6.66	0.05
Elevation (m)	1,593	1,590	0.002
Slope (degree)	9.50	10.45	−0.09
Distance locality >= 5,000 people (km)	32.38	30.54	0.07
Municipal poverty 2005	0.74	0.77	−0.02
Area of parcel enrolled (ha)	1,040	1,253	−0.16
Household size	4.92	4.61	0.10
Member of community	0.64	0.64	0.01
Days worked FCA 2007	8.89	7.00	0.08
Participated in FCA 2007	0.55	0.51	0.06
Number of observations	548	374	

Notes: The full sample considers all observations that have complete information in all covariates used in the analysis. The matched sample uses 1:1 covariate matching with replacement on the Mahalanobis metric. Households are matched exactly by region based on their baseline cooperation levels in FCA. In addition, we exclude observations that have missing information in any of the covariates used in the analysis. The food index is constructed using households' reported prices and considering the consumption of tortillas, milk, beef, pork, cheese, bread, tomato, and beans. Durables and housing indices are aggregates of assets (television, refrigerator, computer, stove, car, phone, and cellphone) and housing characteristics (floor, walls, number of rooms) valued at 2007 prices. The municipal poverty measure is the 2005 marginality index constructed by CONAPO, which includes: education, basic services, employment, and population. The range of this poverty index goes from −1.28 to 3.25 for the full sample. FCA are forest conservation activities. Normalized difference is the difference in average covariate values, divided by the square root of the sum of variances for both groups (Imbens and Wooldridge 2009).

Identification Strategy

The authors estimate the following regression:

$$\text{Mean Dry Season NDVI}_{ipst} = \beta \times \text{Beneficiary}_{it} + \delta \times \text{Rainfall}_{it} + \alpha_{st} + \alpha_i + \epsilon_{ipst}$$

The dependent variable measures mean dry season NDVI value for point i in parcel p, state s and year t. The variable beneficiary is equal to 1 if the point was enrolled in the program in the previous year's cohort. Controls include natural logarithms of dry season rainfall, rainfall in the other months prior to the dry season, standard deviation of rainfall across the year, and a dummy for being in the top tenth percentile of rainfall during hurricane season. State-year fixed effects are absorbed by α_{st}, and point level fixed effects are absorbed by α_i. Cluster standard errors at the parcel level.

Results

According to the baseline specification:

- The program has reduced land cover loss from deforestation or degradation by 40–51 percent compared to what would have occurred in the program's absence.
- These results are robust to multiple specifications, including using different subsets of rejected applicants to establish counterfactual time trends.

Results

TABLE 6—IMPACTS OF PSAH ON LOCALITY LEVEL DEFORESTATION: FIRST DIFFERENCE ESTIMATION

Dependent variable	Percent forest cover change (locality data)		
	(1)	(2)	(3)
Share area beneficiary	1.1062***	1.0992***	
	(0.2879)	(0.2875)	
Share area rejected		0.1496	
		(0.2840)	
Share area beneficiary × Years paid			0.2842***
			(0.0690)
State FE	Yes	Yes	Yes
Observations localities	105,648	105,648	105,648
R^2	0.273	0.273	0.273
Effect size (percent)	19–22	19–22	24–28

Notes: First differences model at the locality level. Robust standard errors, clustered at the municipality level, are in parentheses. Regression includes state fixed effects and controls for locality poverty index in 2000, change in poverty index from 1990–2000; population density in 2000, distance to road, distance to nearest locality with population > 5,000; distance to major city; average slope; average elevation; percent forest in 2000 (National Forest Inventory and Hansen et al. 2013); municipal poverty in 2000; degree of water scarcity; overexploited watershed status; and whether or not municipality is majority indigenous. The effect sizes use counterfactual cover change trends among all localities (−1.192 percent) and untreated localities with > 0.01 share rejected areas (−1.373 percent).

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Results

The authors don't find significant impacts on average household consumption or investment, but the data show significant positive effects for poor households.

- In addition, minimum detectable effect sizes rule out substantial negative impacts on consumption or investment, even for the households most likely to be negatively affected by the program.
- Together the results suggest small but positive poverty alleviation impacts.

Results

TABLE 7—IMPACTS OF PSAH ON HOUSEHOLD CONSUMPTION

	Common property households			Private property households		
Dependent variable	Food index (1)	Durables index (2)	Housing index (3)	Food index (4)	Durables index (5)	Housing index (6)
Panel A. Simple treatment						
Beneficiary	0.028	0.032	0.000	−0.009	0.022	0.001
	(0.019)	(0.025)	(0.003)	(0.027)	(0.043)	(0.001)
Panel B. Treatment by tenure class						
Beneficiary	0.028	0.031	0.000			
	(0.019)	(0.024)	(0.003)			
Beneficiary × Nonmember	−0.020	−0.024	0.001			
	(0.028)	(0.028)	(0.003)			
Marginal effect (for nonmembers)	0.015	0.016	0.001			
Base mean	2.014	1.673	9.901	2.532	4.519	15.900
Base standard deviation	0.870	2.263	4.417	0.846	2.601	9.544
Minimum detectable effect	0.053	0.070	0.008	0.076	0.120	0.003
Observations	922	1,844	1,844	114	228	228

Notes: Columns 1–6: Dependent variables are measured in 2007 pesos and are transformed using the inverse hyperbolic sine. Durables and housing index estimates based on household fixed-effects model (equation (3)). The food index column reports cross sectional regressions with 2011 data. The food index regressions also include: ln(distance to nearest city), household size, municipal poverty in 2005, if the household has a member with full land rights, and the mean elevation of the parcel. The food index is constructed using households' reported prices and considering the consumption of tortillas, milk, beef, pork, cheese, bread, tomatos, and beans. Durables and housing index regressions are aggregates of assets (television, refrigerator, computer, stove, car, phone, cell phone) and housing improvements (floor, walls, number of rooms) valued at 2007 prices. Standard errors are clustered at the property level for common properties and are heteroskedastic robust for private properties. Base means and standard deviations are for the variables in levels. The minimum detectable effect considers a power level of 0.8 and significance level of 0.05. Beneficiary × nonmember interaction term uses demeaned covariates.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Results

TABLE 8—IMPACTS OF PSAH ON LOCALITY POVERTY: FIRST DIFFERENCES ESTIMATION

Dependent variable	Change in poverty index		
	(1)	(2)	(3)
Share area beneficiary	−0.173***	−0.172***	
	(0.048)	(0.048)	
Share area rejected		−0.014	
		(0.047)	
Share area beneficiary × Years paid			−0.043***
			(0.012)
Marginal effect at mean share	−0.041	−0.040	−0.051
	105,648	105,648	105,648

Notes: Columns 1–3: First differences model at the locality level. Robust standard errors, clustered at the municipality level are in parentheses. Regressions include state fixed effects and controls for locality poverty index in 2000, change in poverty index from 1990–2000; population density in 2000, distance to road, distance to nearest locality with population > 5,000; distance to major city; average slope; average elevation; percent forest in 2000 (National Forest Inventory and Hansen et al. 2013); municipal poverty in 2000; degree of water scarcity; overexploited watershed status; whether or not municipality is majority indigenous.

***Significant at the 1 percent level.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Conclusions

The authors conclude that Mexico's Payments for Hydrological Services program has succeeded in significantly reducing expected land cover loss.

- This justifies some optimism about the potential for payments for ecosystem services as a mechanism for maintaining environmental quality.
- Yet the findings also suggest the need to be cautious with respect to whether PES can generate significant poverty alleviation.

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