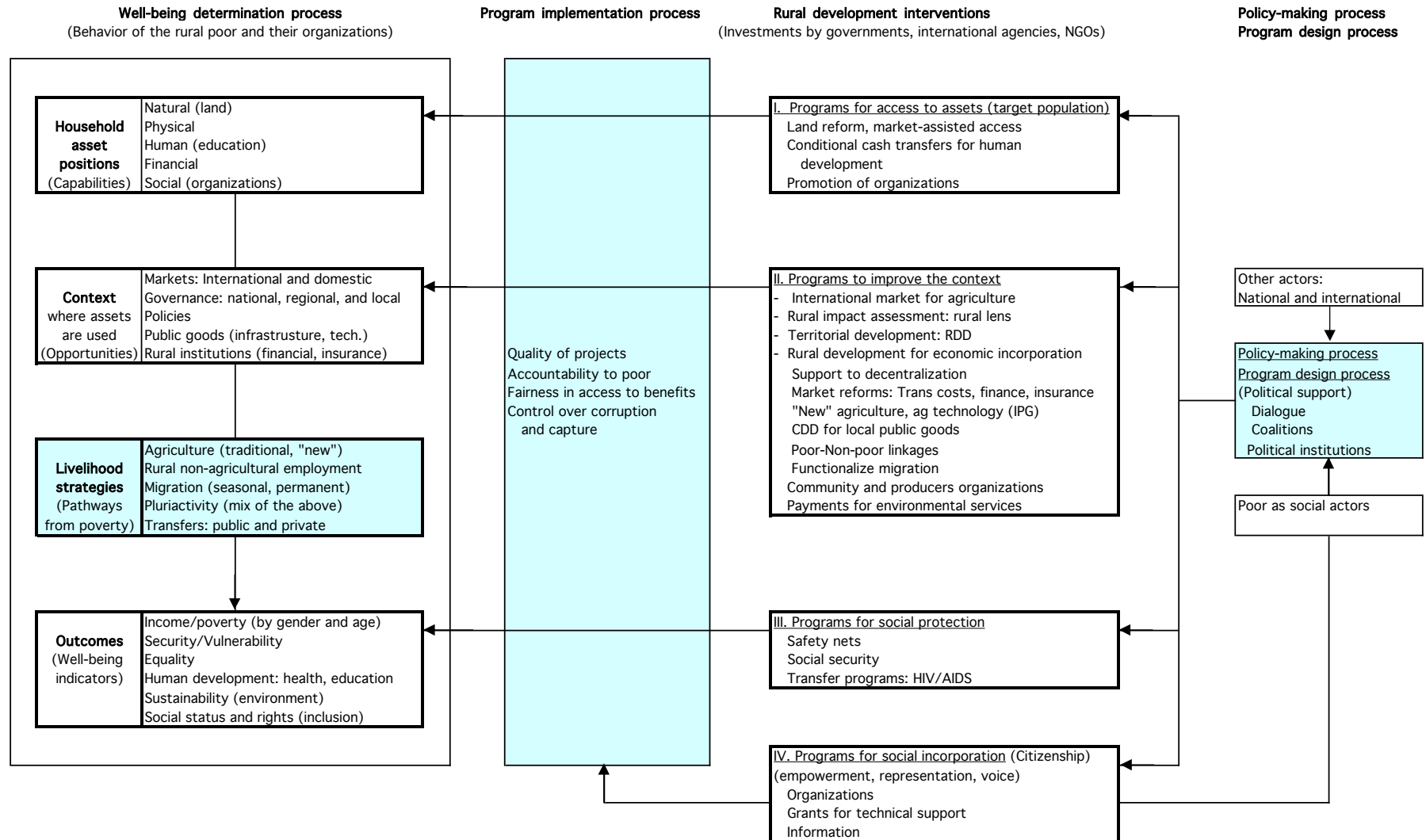


Handout #10: Rural development policy and household and community behavior

Conceptual framework for integral rural development



Part II: Household behavior

I. Importance of peasant households (“family farmers”)

Numerical importance: 1.2 billion households, more than half of humanity.

Economic importance: role in production (Africa, India, but also Asia and Europe). US family farms.

Welfare importance: among poorest of poor, migration to cities; 70% of world poor are rural.

Political importance: rebellions and revolutions (Mexico, China, Vietnam). Political vote (Europe, Japan).

Questions: Who are they? What do they do? What determines their welfare? How can it be improved?

II. Definitions of peasant households

Household = people who eat together = “family” (nuclear, extended).

The household as a unit of analysis: integrates production, consumption, and reproduction decisions.

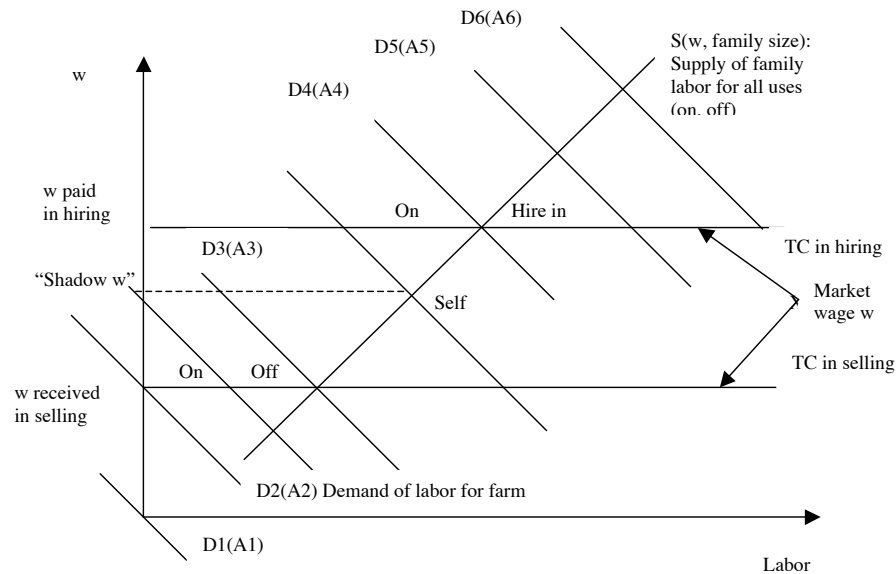
2.1. Definition 1: Ellis (*Peasant Economics*): six features:

1. Live mainly from agriculture (including herders, foresters, fishermen): have access to natural capital.
2. Use mainly family labor in production.
3. Are partially integrated in markets (role of self-sufficiency in consumption, self-provision of inputs).
4. These markets are imperfect (transactions costs, not competitive): role of market failures.
5. Are usually members of communities (access to CPR, moral economy (mutual insurance), land and labor contracts, interlinked transactions, patron-client relations, provision of local public goods).
6. Are part of a larger non-peasant society where they are dominated (surplus extraction, political domination). No society is dominated by peasants (Wolf).

2.2. Definition 2: Based on labor market integration (Figure 1)

Price bands model (transactions costs on labor market): labor market failure.

Differential endowments in natural capital: different levels of demand for labor to use this capital (from D1 to D6 as farm size A increases). Asset positions define social class membership.



Social class: heterogeneity	Farm size (Assets)	Labor demand	Labor use		
			Off-farm	On-farm	Hire in and supervise
Landless	< A2	D1 to D2	++	0	0
Sub-family	A2 to A3	D2 to D3	+	+	0
Family	A3 to A4	D3 to D4	0	+	0
Small commercial	A4 to A5	D4 to D5	0	+	+
Large commercial	> A5	D5 to D6...	0	+	++

Peasants (differentiated, heterogeneous group of households):

Sub-family farmers: work on farm and hire out (“pluriactive”).

Family farmers: self-sufficient in labor.

Small commercial farmers: work on farm and hire in labor, with number of hired workers less than the number of working family members (say).

Non-peasants:

Lower limit = landless: only hire out.

Upper limit = large commercial farmers: hire more labor than they use family labor (say). Family labor is increasingly supervisory of hired labor.

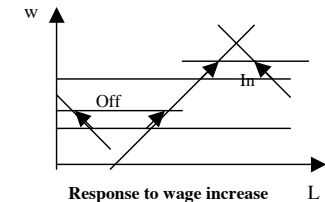
Correspondence with Ellis definition: 1, 2, 3, and 4 satisfied.

2.3. Differentiated labor allocation responses to an increase in wage

	Off-farm	On-farm	Hire in and supervise	Total work by household	Total labor applied to farm
Sub-family	+	-	0	+	-
Family	0	0	0	0	0
Small commercial	0	+	-	+	-

Importance of heterogeneity: opposite responses for on-farm work between sub-family and small commercial peasant households.

III.



III. Market failures and land reform

Differential asset positions: Farm size owned \bar{A}

Is there an inverse relation between farm size and land productivity?

Differential exposure to market failures across households:

Captive resources with zero opportunity cost off-farm (child and elderly labor, some female labor, supervision abilities).

Transactions costs in accessing markets: own labor cheaper than hired labor.

Moral hazard in hired labor: need supervise hired labor. Family labor is self-motivated as residual claimant.

Credit constraint with land as collateral.

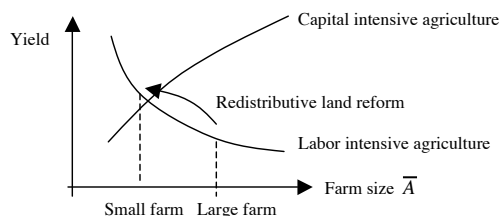
Cheaper capital for larger farmers (fixed costs, economies of scale on loan size)

Example: Two market failures (Eswaran and Kotwal model)

Labor market failure (family labor cheaper than hired labor)

Credit market failure (credit proportional to land owned used as collateral)

Creates an “inverse relation” between farm size and yield. Hence, there is complementarity (win-win) between efficiency (yield) and equity (more egalitarian distribution of the land). Land reform that redistribute the land from large to family farms can achieve both efficiency and equity gains.



Note 1: If the land market would work perfectly for all households, it would achieve this same outcome in concentrating the land toward the most efficient farm size. “Land-market assisted land reform” to give subsidies to the poor in accessing land via land market transactions (World Bank, Brazil \$5Billion loan).

Note 2: The inverse relation can turn into a positive relation if agriculture is capital intensive and the capital advantage of large farms dominates over their labor cost disadvantage. In this case, a redistributive land reform will create equity gains but at an efficiency cost: there is a trade-off between equity and efficiency. Hence, need “complete” land reform where land redistribution is accompanied by institutional reforms to make SF competitive (entrepreneurship, credit, marketing, etc.).

Note 3: Successful complete land reform difficult to achieve
 Redistribution: relatively “easy” phase (land market-assisted land reform)
 Competitiveness: institutional reforms difficult to achieve.

IV. Household behavior under food and labor market failures: impact on the supply response of cash crops

Household model:

Production: food crop, cash crop

Inputs used: labor, fertilizer

Consumption: food, manufactured goods

Goods that can be produced/supplied by the household or sold/bought: food, labor

Goods that need to be bought/sold on market: fertilizer, manufactured consumption goods

Policy question: How much supply response to a rise in the price of cash crops?

Simulation Results

	Impact of a 10 percent increase in the price of cash crops			
	Market failures			
	Food and labor	Labor	Food	None
	Percentage changes over base			
Consumption				
Food	-0.5	3.0	-0.8	2.1
Leisure	0.4	0.6	4.0	2.7
Manufactured good	15.8	7.7	9.5	5.6
Production				
Food crop	-0.5	-6.4	-0.8	-5.4
Cash crop	1.8	9.3	5.5	9.9
Fertilizer	4.7	2.8	3.1	2.2
Labor	-0.6	-1.0	3.9	1.7
Prices				
Food crop	8.8	-- ^a	5.8	
Cash crop	10.0	10.0	10.0	10.0
Fertilizer				
Labor	9.3	4.5		
Manufactured good				
Net labor supply ^b			-10.6	-6.1
Marketed surplus of food ^b		-10.1		-7.9

^aBlanks indicate no change relative to base value.

^bNet labor supply in percent of household labor effort, and marketed surplus in percent of food production.

Source: A. de Janvry, M. Fafchamps, and E. Sadoulet, "Peasant Household Behavior with Missing Markets: Some Paradox Explained", *Economic Journal*, Vol. 101, No. 409 (November 1991), pp. 1400-17.

V. How can peasants be competitive?

Labor cost advantage (residual claimant; no transactions cost on labor market).

They can devise effective strategies to compensate for market failures:

Credit market failures: liquidity strategies; MFI.

Insurance market failures: self-insurance, mutual insurance, sharecropping contracts

Transactions costs: producers' organizations; contracts.

Community (local information and social capital to defeat AS and MH) for the delivery of local public goods; management of CPR.

Pluriactivity: competitive as family business, not as pure farmers (Japan, Taiwan, Europe).

Hence, inverse relation can prevail. Explains the competitiveness and permanence of peasants.

VI. Household heterogeneity and differentiated impact of policy reforms (incidence analysis)

Example: NAFTA reduces the price of corn in Mexico as cheap US corn is imported freely.

There are large price bands on corn.

Some Mexican farm households are net sellers of corn, some self-sufficient, and some net buyers.

Mexico introduces the PROCAMPO program (direct cash transfers decoupled from current production and proportional to past area planted in basic crops to compensate corn producers for the impact of NAFTA).

Who gains and who loses? Are the policies universally bad for peasant corn producers?

Differentiated impact across households of a same policy intervention (NAFTA + PROCAMPO):

Net sellers (households with most land): lose. Are partially compensated by PROCAMPO transfers.

Self-sufficient: zero effect of price change. Gain from PROCAMPO transfers.

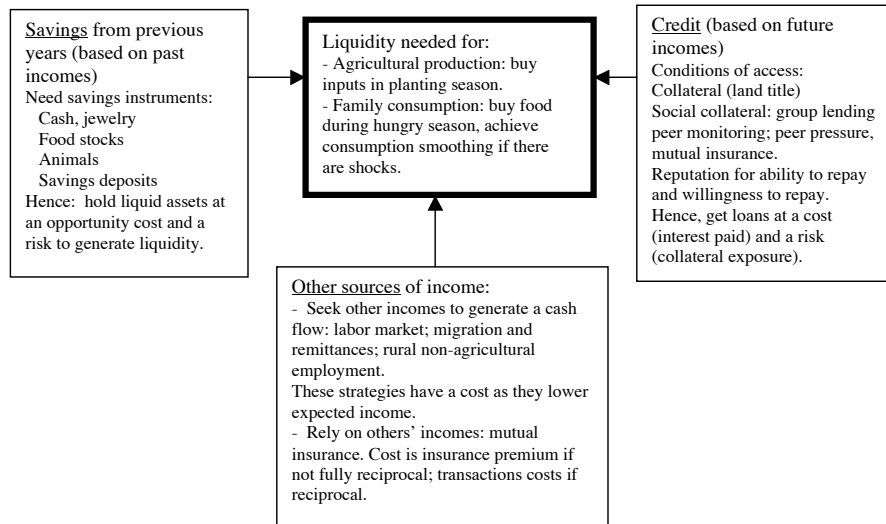
Net buyers (households with least land): gain from price change as they are net buyers of corn (cheaper food)! And they also gain from receiving PROCAMPO transfers!

Hence, NAFTA and PROCAMPO can both reduce poverty and increase equity across Mexican peasants in spite of the rhetoric.

Income effects of NAFTA and PROCAMPO (per hectare)		Decline in the price of corn NAFTA	Cash transfer proportional to area PROCAMPO	Incidence analysis: Net effect
Poor	Net buyers	+	+	++
	Self-sufficient	0	+	+
Non-poor	Net sellers	--	+	-

But note: There may be negative secondary effects on the poor through the labor market as employment in the farms of the non-poor falls.

VII. Credit constraint: strategies to generate liquidity with seasonal production



Note: every liquidity strategy has a cost

VIII. Lack of insurance within a risky environment and high risk aversion (poverty)

How do the poor insure? Goal: achieve consumption smoothing when there are large income shocks (due to weather, unemployment, price fluctuations, sickness) and high risk aversion (due to poverty).

1. Risk management (to reduce income risk): reduce the variability of income at the cost of reducing expected income.

Crop diversification: less specialization than for maximum expected income.

Choose traditional seeds (less risky) as opposed to high yielding varieties (HYV) with higher expected yields but higher exposure to climatic risk.

Diversification of sources of income (portfolio): participate more to the labor market and to migration to reduce income risk from agriculture. Choose activities with incomes that have low correlation.

Use contracts: sharecropping contracts to share risk (rent paid proportional to output); forward sales contracts.

2. Risk coping (to stabilize consumption given fluctuating income realizations)

Use credit: emergency loans from money lenders, merchants. Loans need to be flexible, fast.

Quasi-credit: contingent loans from others that are repaid according to the mutual needs of the lender and the borrower.

Use savings: Hold food stocks

Choose to accumulate more liquid assets that can be sold in case of income shock: less pumps and more bullocks at a cost relative to maximum expected farm profits.

Use insurance:

Formal insurance rarely available due to MH and AS.

Extended family system as a source of insurance.

Marriage of girls in other agroecological zones (Rosenzweig on India)?

Mutual insurance networks ("moral economy of peasants" (Scott)), patron-client relations.

Note: risk management and risk coping are related since access to more risk coping instruments allows to reduce risk management and take more risks in production to achieve higher expected incomes.

IX. Intra-household allocation of resources and gender roles

Impact of who decides (one agent or bargaining) on:

Allocation of land to food crops versus cash crops

Use of cash income for investment versus health, nutrition, education expenditures

Allocation of food among household members.

1. If one agent decides: unitary model (patriarchy, matriarchy, cooperation)

Unequal allocation of food within the household due to unequal contributions to income and production. Protect the food consumption of wage earners. Hence, gender-based nutritional differences. But observe altruism beyond rules of survival.

2. If differential jurisdiction over household income: bargaining model (no income pooling)

Fall back option determines the bargaining strength of individual members: role of women's education and access to employment; laws on divorce and asset ownership; control over dowry (joint property or separate property).

Policy implication: Progresa (Mexico) channels cash transfers for child education, health, and nutrition through the woman. If unitary household, no difference. If bargaining household, transfer may have greater impact on child welfare.

X. Role of choice of contracts to achieve transactions when markets fail

Land-labor contracts: fixed rent, share rent, wage employment.

- **Fixed rent contracts:** gives full reward to the entrepreneur, and non-distortive since a lump sum payment.

But: Risky to tenant as rent paid in advance of yield outcome. And requires liquidity (rent paid at beginning of season; all inputs paid by tenant).

- **Share rent contracts:** gives partial reward to the entrepreneur who provides labor (only gets a share of output, typically half), creating a disincentive to the provision of effort (the Marshallian disincentive).

But: Risk is shared with landlord as the rent paid is proportional to output achieved. Also requires less liquidity as rent is paid at the end of the season, and the cost of purchased inputs can be shared with the landlord.

- **Wage contracts** (owner-operator): Has problem is AS and MH in hiring labor, and landowner may not be a good farmer.

Use time rate wage: need monitor for quantity of effort.

Use piece rate wage: need monitor for quality of effort.

Why do we observe share contracts in spite of the Marshallian inefficiency created by output sharing when effort is not shared? Reasons to choose a sharecropping contract:

Allows risk reduction when there is no insurance market.

Allows to reduce liquidity constraint for the tenant (rent paid at end of season, costs of purchased inputs shared) when there is no credit market.

Each partner can provide inputs not provided on the market: landlord provides management; tenant provides labor supervision. There are market failures for these two services.

Logic for the existence of sharecropping in spite of the Marshallian inefficiency (recall logic of New Institutional Economics): The contract is inefficient because of sharing. However, alternative contracts would be even more inefficient due to market failures for insurance, credit, and management-supervision. Hence, sharecropping is a locally first best contract (it is relatively the most efficient contract for the landlord) in a second best context of market failures.

Part III. Community behavior: Determinants of cooperation

Role of community behavior: delivery of local public goods, management of common property resources. Is there community failure? Important for devolution programs.

I. Grounds for pessimism about cooperative behavior

1. **Garrett Hardin's tragedy of the commons in open access resources:** logic to extract from the resource as fast as possible before others do so, to the point where $AR = AC$, and $\Pi = 0$.

Hence, need transform open access into closed access CPR as a necessary pre-condition for possible cooperation.

2. **Prisoner's dilemma (PD)** (symmetric non-cooperative game) to explain tragedy of the commons
C = cooperate, D = default

Pay-off matrix: $D > C$ if other C (incentive to cheat if other cooperates); $C < D$ if other D (incentive to default if other defaults).

		Player B	
		Payoffs	
Player A	C	100, 100	-100, 200
	D	200, -100	0, 0

Solution: If $C \rightarrow D$, if $D \rightarrow D$. Hence default is the dominant strategy.

3. Centralized solution to the PD

Management imposes a punishment of -150 if default.

Pay-off matrix: After fine, $C > D$ if other C: No incentive to cheat.

		Player B	
		Payoffs	
Player A	C	100, 100	-100, 50
	D	50, -100	-150, -150

Solution: If $C \rightarrow C$, if $D \rightarrow C$. Hence both cooperate. This assumes ability to monitor and enforce by management. Shows that can induce cooperation by taxing default (enforcement).

II. Grounds for optimism about cooperative behavior: cooperative solution in non-cooperative games

1. Chicken game (James Dean)

Positive gains from cooperation even if the other defaults.

Payoff matrix: if the other chooses D, $C > D$. Each player gets more by doing the job alone than by defaulting.

		Player B	
		Payoffs	
Player A	C	100, 100	50, 150
	D	150, 50	0, 0

Solution: if $C \rightarrow D$, if $D \rightarrow C$. Hence job gets done by one player anyway! Thus key role of positive gains from cooperation even if other defaults (e.g., fixing fences, cleaning canals).

Chicken game with heterogeneous group:

If rich and poor play chicken game, and rich decides first, he chooses D: poor has to do it.

If poor too poor to do it, he must choose D: rich has to do it.

2. Assurance game

Like to do things together (role of social norms), but do not agree on what (i.e., C1 or C2)

Payoff matrix: gain from choosing the same option as the other greater than choosing the opposite option.

		Player B	
		Payoffs	
Player A	C ₁	100, 100	-100, 50
	C ₂	50, -100	0, 0

Solution: if $C_1 \rightarrow C_1$, if $C_2 \rightarrow C_2$. Hence there are multiple cooperative equilibria.

Which solution is chosen, (C₁, C₁) or (C₂, C₂) depends on the probability that A attributes to the choice that B will make. Choosing the better solution C₁ thus requires:

- (1) Pre-game communication (coordination) to exchange information and coordinate choices; or
- (2) Leadership: if leader A chooses C₁, then B chooses C₁. Key role of catalyst who starts cooperation.
- (3) Role of mutual expectations (the other will cooperate at C₁), role of trust (the other will cooperate at C₁ if I do).

3. Repeated game

The game continues if there is cooperation and stops if there is default. If the termination date is known, then the PD solution applies to the last period and recursively to all years before. Thus, cooperation fails. Cooperation requires infinitely repeated games or games with uncertain termination date.

3.1. **Folk theorem:** cooperate if present value of future gains from cooperation exceeds immediate gains from defaulting.

3.2. **Tit-for-Tat game:** start by cooperating. Then do the same as the other: C if C, D if D. Will work if the probability that the game continues the next period is high enough.

What helps for repeated games:

- Long history of cooperation and trust, role of reputation, shared social norms, no exit option.
- Graduated sanctions for violation of rules (allow for one-time mistakes; impose sanctions proportional to the size of the offense).
- Ability to change the rules of the game: neither too costly to adapt rules to changes (e.g., to changes in market opportunities, to technological change), not too easy to undermine credibility of the rules.

III. Grounds for optimism: determinants of cooperation and determinants of collective action (also for political economy: lobbying, rent seeking)

Cooperation requires

- (1) A particular type of group and of resource.
- (2) Positive individual expected gains from cooperation.
- (3) Observability and monitoring of the others' actions and third party verifiability.
- (4) Ability to enforce (punish) in case of default.

1. Type of group and type of resource (CPR)

- Clearly defined boundaries, well defined authority of the group over the resource: group can restrict entry; common property resource as opposed to open access resource and to global commons that cannot be enclosed and require global cooperation (Kyoto Agreement).
- Well defined group membership.
- Technical knowledge of the problem (known optimal level of use and known gains from reducing over-use).

2. Expected gains from cooperation

- Triggers: Role of distress in creating greater gains from cooperation (Chicken game); crises, catastrophes, injustices (Albert Hirschman's "Getting Ahead Collectively").
- Number of members: smaller groups allow larger per capita gains from cooperation (Mancur Olson). But larger groups can give better insurance to their members.
- Right to organize recognized by government authorities.

3. Observability and monitoring

- Group characteristics:
 - Number of members: smaller groups have lower cost of communication, allow greater observability of others' behavior.
 - Peer monitoring, existence of accountable monitors.
 - Homogeneity of group: allows better understanding of what others are doing.
- Physical ease of monitoring: proximity of members (e.g., town vs. rural setting).
- Organization based on nested enterprises instead of large organization: decentralization (local governance), formation of sub-coalitions.

4. Enforcement

- Sanctions are easier to apply if the cost of an exit option is high (limited opportunities for migration and participation to the labor market).
- Perception of fairness in the distribution of gains and costs: individual participation to costs (provision) proportional to participation to benefits (extraction).
- Role of traditional culture, relatively closed and undifferentiated community, shared social norms. Fear of being ostracized and loss of social capital.
- Charismatic leadership.
- Credibility of threats and commitment to sanction defaulters.
- Existence of conflict resolution mechanisms: local schemes of authority, role of the elders and chiefs, credible court systems, Alternative Dispute Resolution (ADR) mechanisms.
- Interlinked transactions with other community members: loss of access to other community advantages if defaults on rules (e.g., mutual insurance, role of reputation to access credit, patron-client relations).
- Meta-punishment problem: who will punish the punisher (social planner) if he defaults in punishing?