Child Labour and Agriculture
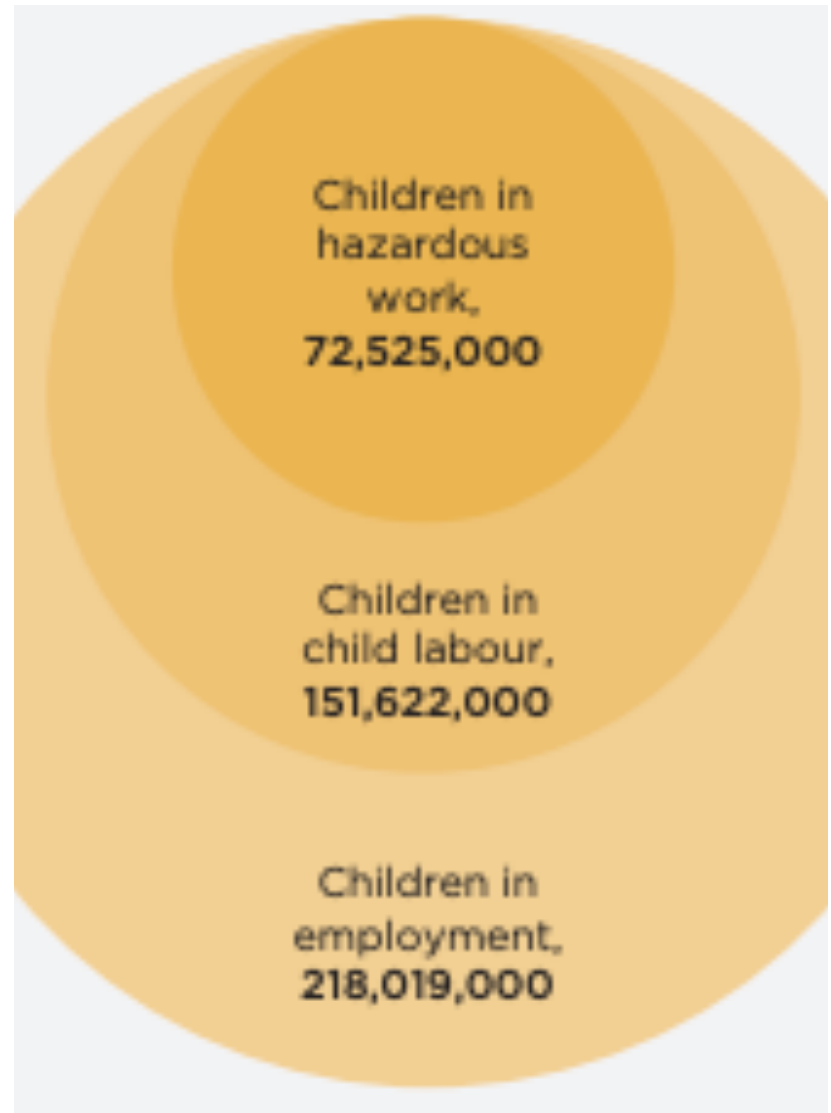
Azamat Usubaliev

Child labour

- There are around 220 mln number of child workers.

- **Table 6: Child worker worldwide Number**

Industrialised economies   2.5 million   USA (300,000 to 800,000)
Transition Economies   2.4 million

Sub-Saharan Africa   48 mln

Asia and the Pacific   127.3 mln

  India   (20 to 30 mln)

LA and the Caribbean   17.4 mln

Middle East & North Africa 13.4 mln

- **World   211 million to 246 million**

Children in hazardous work, 72,525,000

Children in child labour, 151,622,000

Children in employment, 218,019,000

Source: International Labor Organization's analysis of statistics from National Child Labour Survey, 2017.

What type of work do children do?

- (1) Stone breaking
- (3) Pot making
- (5) **Carpet weaving**
- (7) Firecracker making
- (9) Cattle herding
- (11) Child soldier
- (13) Drug trafficking
- (14) Many more …

(2) Brick kilns

(4) Plastic toy making

(6) Matchbox making

(8) Tea stall

(10) Agricultural worker

(12) Prostitution

Child Labour in Kyrgyzstan

Children	Age	Percent
Working (% and population)	5 to 14	33.9 (397,407)
Working children by sector	5 to 14	
Agriculture		98.98
Industry		0.3
Services		0.8
Attending School (%)	5 to 14	86.5
Combining Work and School (%)	7 to 14	41

Source: International Labor Organization's analysis of statistics from National Child Labour Survey, 2014.

Rates of Return to Investment in Education by Level of Education, Country, Type, and Region

Country Type and Region	Social Rate of Return (%)			Private Rate of Return (%)		
	Primary	Secondary	Higher	Primary	Secondary	Higher
Developing						
Sub-Saharan Africa	24	18	11	41	27	28
Asia	20	13	12	39	19	20
Latin America	18	13	12	26	17	20
Developed	14	10	9	22	12	12

Source: George Psacharopoulous. "Returns to investment in education: A global update," *World Development* 22 (1994): 1325–1343, tab. 1. Copyright © 1994. Reprinted with the permission of Elsevier.
Note: How these rates of return were calculated is explained in note 20 at the end of this chapter.

Theoretical argument: Basu-Van model, 1998 (AER)

- The authors argue that parents send their children to work only when they are desperate, only when their income is low.

- Poor parents are not selfish or exploitative; they are as altruist and caring as well off parents are.

- When parents earn enough, they want their children to go to school rather than fetch an extra income for the family. This feature, called by the authors as **Luxury Axiom makes the labour supply curve downward sloping.**

Basu-Van model setup

- Suppose that there are N identical households, with one parent and one child.
- Each household endowed by 1 unit of adult and 1 unit of child labour.
- w – wage rate of parent, ω – wage rate of child.
- e – child's work time and (1-e) – time spend in school.
- s – subsistence level of consumption.
- Child's consumption if a fraction of parent's consumption given by βc.
- Child's wage rate is less than parents wage rate – $\omega = \gamma w$.

Basu-Van model setup

- Household preferences presented by the Stone-Geary utility function

- $U(c, e) = (c - s)(1 - e)$ $\ if\ c \geq s$

    $\qquad\qquad\qquad = (c - s)$ $\qquad\ if\ c < s$

- the budget constraint of household is:

    $$w + e\omega \geq c(1 + \beta)$$

- parents maximize their objective function with respect to (e,c), subject to the budget constraint.

Basu-Van model assupmtions

- **Assumption 1 (Luxury Axiom)**. Households must meet a subsistence consumption s before they value education.
- According to this assumption, once the subsistence consumption is met, the parents would strongly prefer education. That means, the income elasticity of education is likely to be greater than 1, as if education is a luxury good.
- **Assumption 2 (Substitution axiom).** There is a set of competitive firms, who employ both child and adult labour as (imperfect) substitutes.
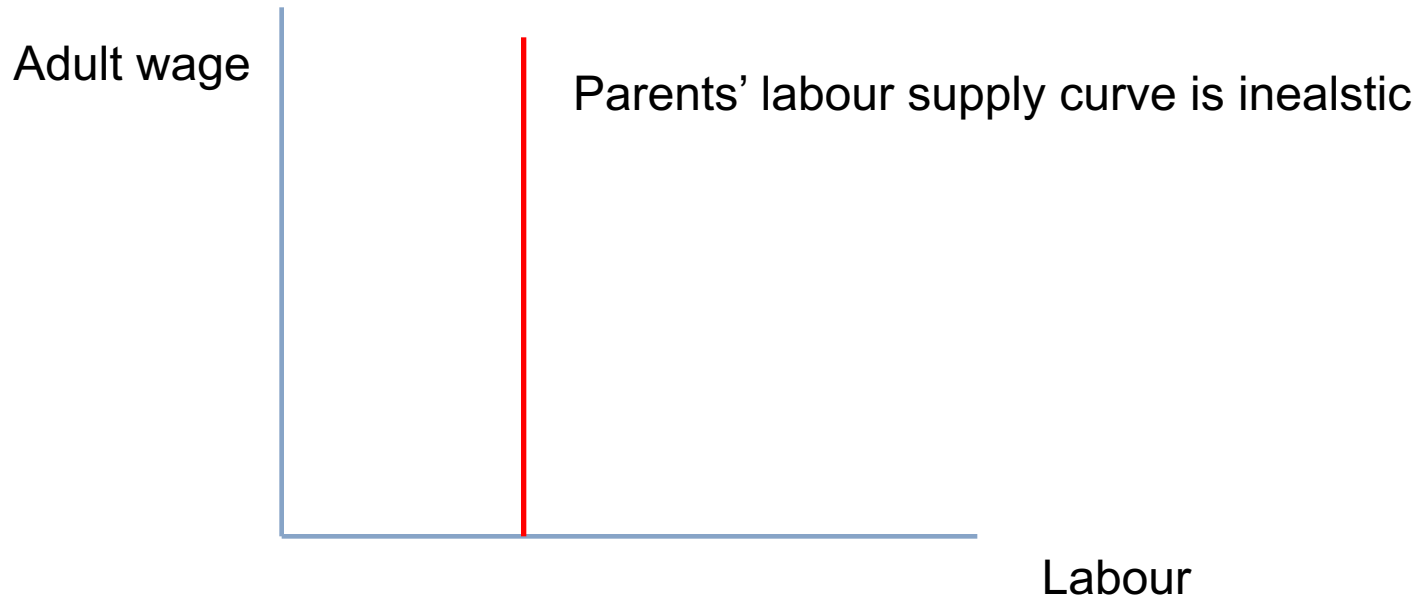- i.e. the rms must be indifferent between the two.

Basu-Van model

$$
\begin{aligned}
e_W &= 0 & for \quad w > \frac{\sigma}{1-\gamma}, \\
&= \frac{1}{2} + \frac{\sigma - w}{2\gamma w}, & for \quad w \in [\frac{\sigma}{1+\gamma}, \frac{\sigma}{1-\gamma}], \\
&= 1 & for \quad w < \frac{\sigma}{1+\gamma},
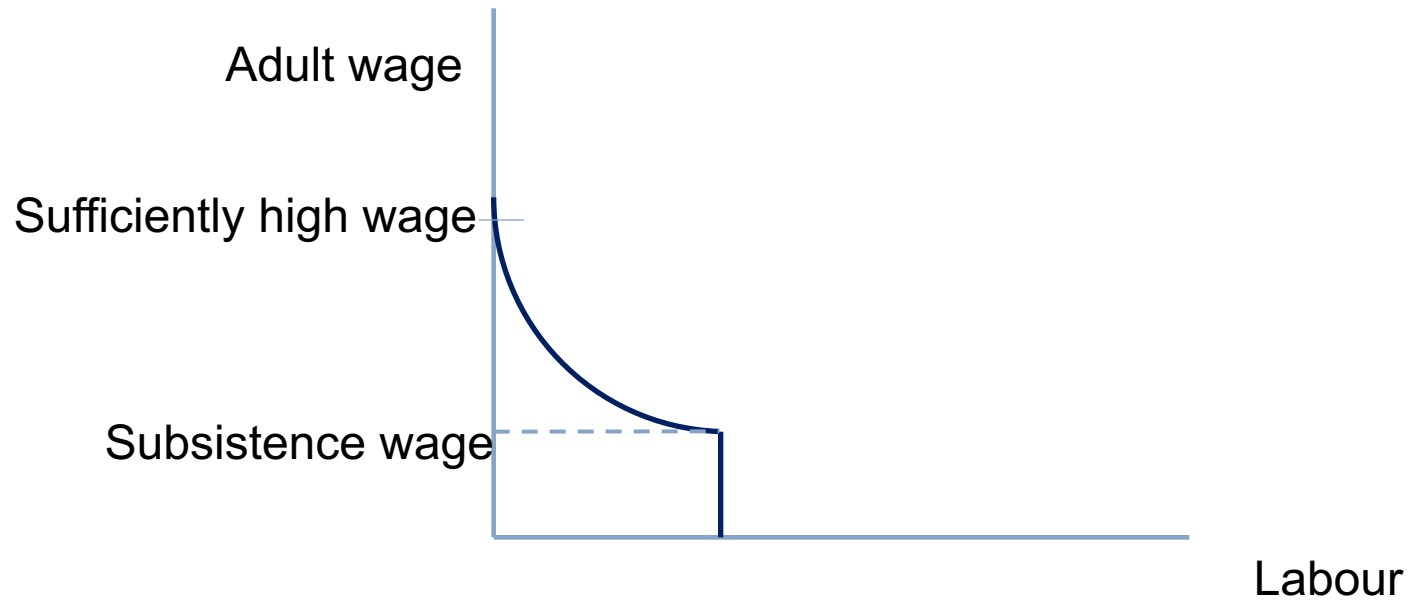\end{aligned}
$$

where $\sigma = s(1 + \beta)$.

Graph of labour supply curve

• Parent's labour supply (they work full time)

Adult wage

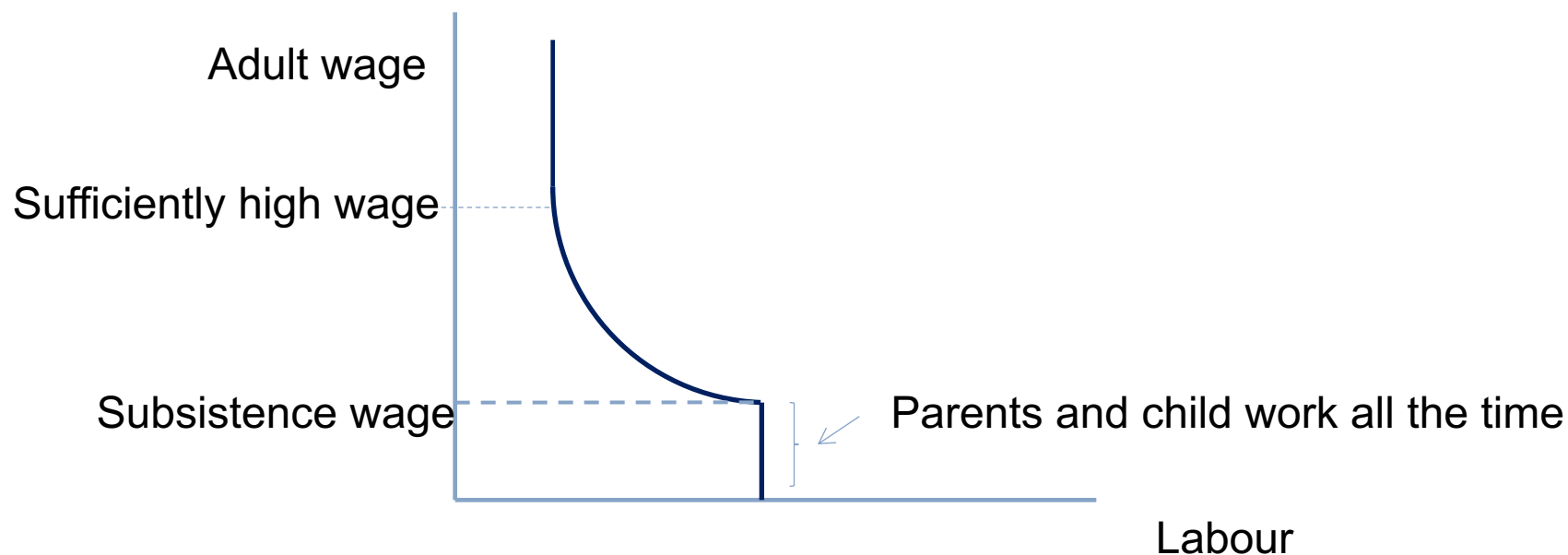Parents' labour supply curve is inealstic

Labour

Graph of labour supply curve

• Child's labour supply curve

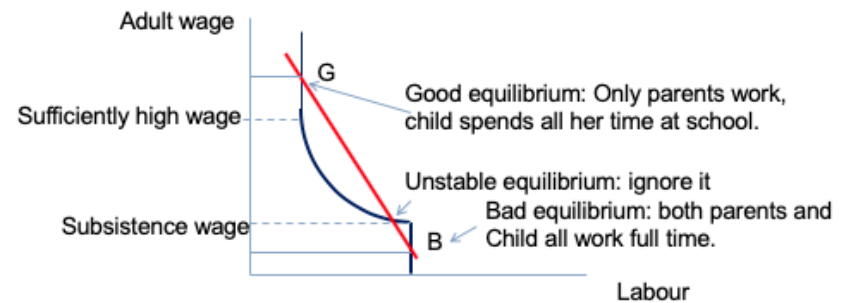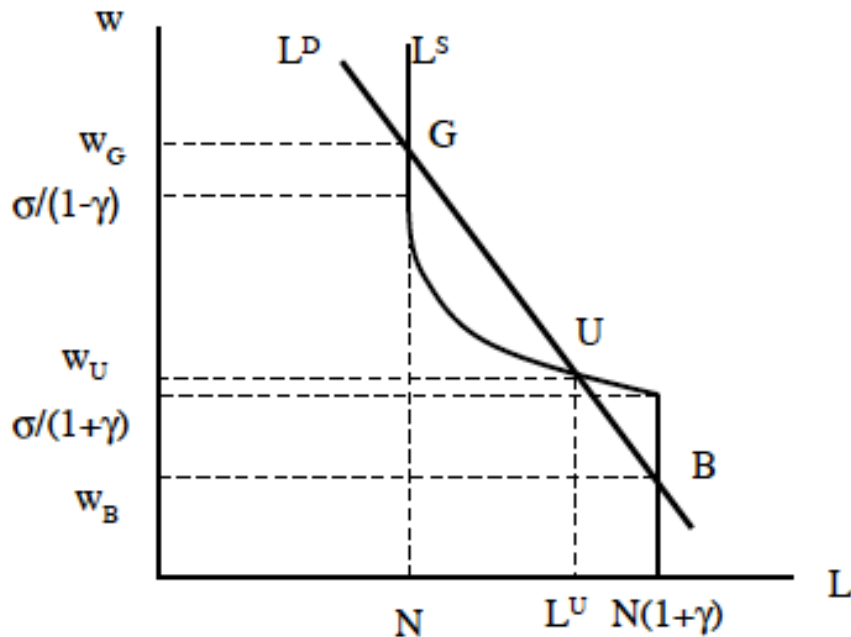# Graph of the family's labour supply curve (child's and parent's combined)

- Family's labour supply curve

Adult wage

Sufficiently high wage

Subsistence wage — Parents and child work all the time

Labour

Higher the wage, lower the supply of labour of the whole family. Parents work all the time; children spend more time at school as wage rises.
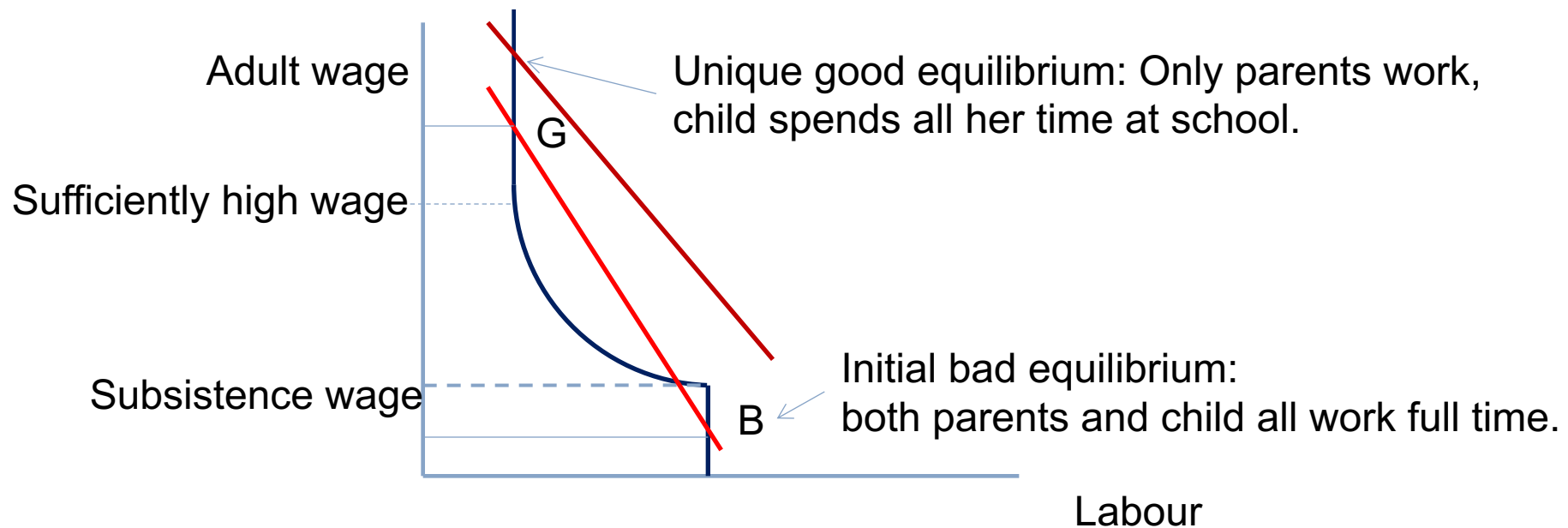
Multiple equilibria in the labour market

- Two stable equilibria

W

L^D L^S

W_G G

$\sigma/(1-\gamma)$

W_U U

$\sigma/(1+\gamma)$

B

W_B

N L^U $N(1+\gamma)$ L

Adult wage

G   Good equilibrium: Only parents work, child spends all her time at school.

Sufficiently high wage

Unstable equilibrium: ignore it
Bad equilibrium: both parents and

Subsistence wage

B   Child all work full time.

Labour

The economy could be in a bad equilibrium or in a good equilibrium. There is no way to guarantee where it will be. It may depend on chances and historical factors.

How to get out of the bad equilibrium ? Make the labour demand curve shift out.

- Graph

Adult wage

Unique good equilibrium: Only parents work, child spends all her time at school.

G

Sufficiently high wage

Subsistence wage

B

Initial bad equilibrium: both parents and child all work full time.

Labour

Economic growth helps to reduce and even eliminate child labour.

Solution

- The policy prescription depends on whether one sees the problem of child labour as <u>exploitation</u> or as a <u>consequence of poverty</u>.

- The exploitation view and the punishment approach: who is the exploiter? Parents? The employer? What action to take against them?

- Child worker and his/her family as a victim: Need to take a graduated and incentive-based approach

Other measures

- **Ban on child labour**: Basu-Van model says that a ban would eliminate the bad equilibrium, and thus in that sense it would be good. But enforcement remains a serious issue.

- **Incentive to attend school**: Meal at school programme is very helpful. India's experience is showing positive result.

# India's meal at school programme

- In 2001 India launched a national programme of providing cooked meal at primary schools (known as mid-day meal).

- From 2005 the Supreme Court of India has made it mandatory to be part of all schools (up to class VIII), particularly among the poor.

- Currently, 150 million children are provided with this meal.

- The programme costs the government about 1.5 billion US dollar annually.

- It is widely believed that despite many imperfections in the system, this single measure is having a dramatic effect on school attendance.

Empirical evidence of the Basu-Van model

- Researchers tested the theoretical model of Basu-Van to see if land-richer families have less child labour than land-poor families.

- The evidence is found to be opposite. Land-richer families were giving less education to their children (India, Pakistan, Ghana) : → an apparent puzzle

- This research is still evolving

- One view is that there is an 'inverted U' relationship between family's landholding and child labour (seen the next graph)

- At sufficiently land-rich households child labour will disappear.

Landholding and child labour

- The inverted U curve of child labour
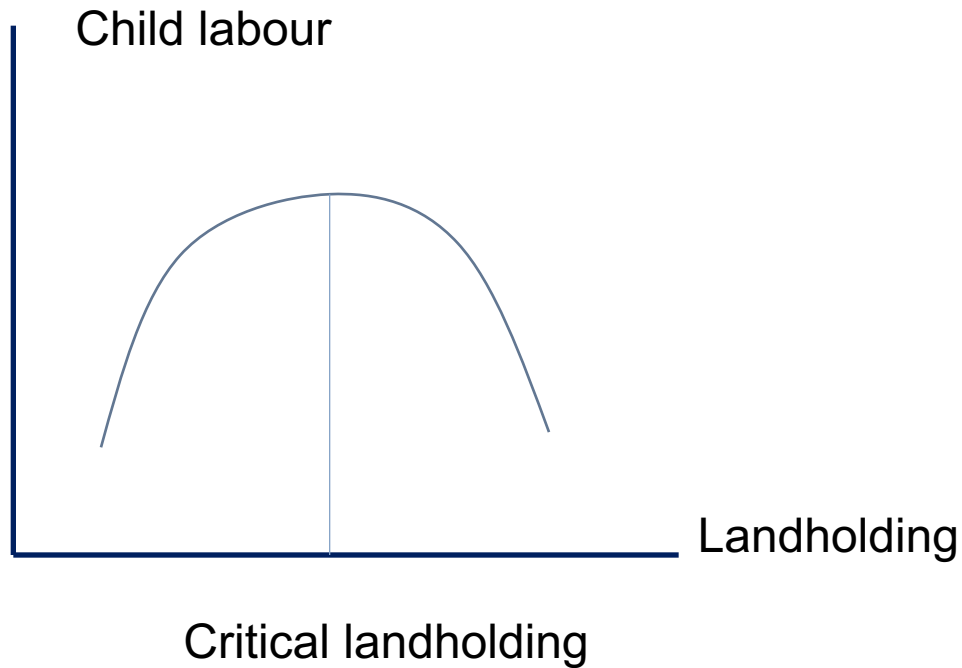
Relevance of the rural sector

- 3.3 billion people in the developing world live in rural areas

- 2 billion engaged in subsistance agriculture

- 2 / 3 of rural people in developing countries are engaged in activities which generate no surplus

- 1 billion of them are hungry (or extreme poverty)

Agricultural productivity gap

- Productivity gaps between the developing world and the developed world are huge.

- While there has been steady absorption of modern technologies in agriculture; along with it credit market has changed and the scale of farming has grown larger and larger.

Cross continent comparison of agricultural productivity

Asia: Intensive farming, high on irrigation and fertilizer
Latin America: Large farm size causes underutilisation of land
Africa: Fairly behind in modernisation

	Africa	**Asia**	**L. America**
Cereal yield (MT / ha)	1.23	2.94	2.48
Cereal output percapita (kg)	159	274	280
Land / labour	5.9	1.3	24.8
Fertilizer / arable land (kg / ha)	19	126	63
Irrigated area / arable land (%)	6.6	33.3	9.2
Tractors / arable land (no. / 1,000 ha)	290	804	1165

Labour productivity in agriculture

Production of US farmer vs self-consumption:
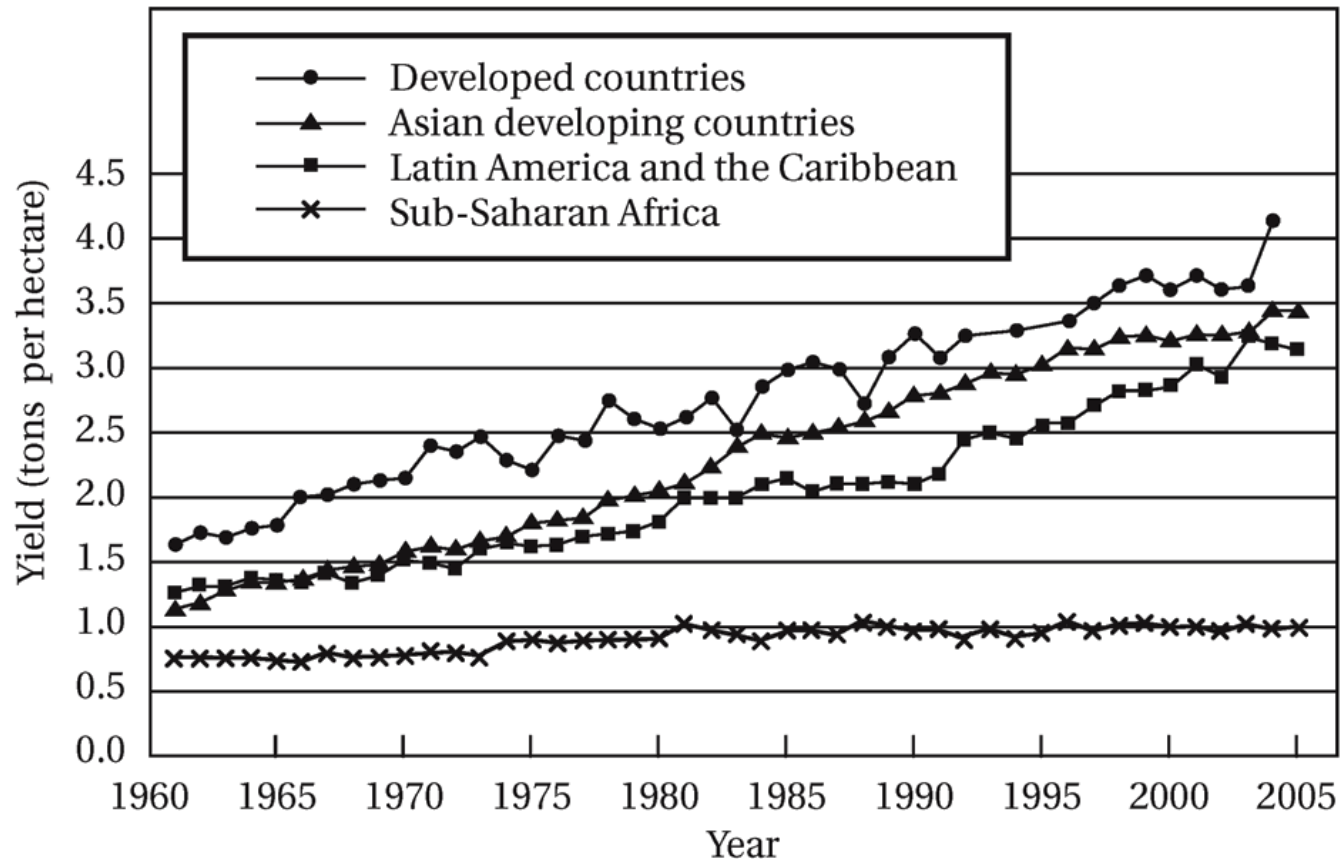
1820   4 times his/her consumption

1920   8   "

1952   16   "

1964   32   "

2000   100   "

Gap between developed & developing countries
   (per capita output):

1960   13 : 1   (per capita output $680:$52)

2000   50 : 1

Cereal yields, 1960 – 2005: Asia and Latin America catching up, but Africa falling behind

Institutional factors: to what extent the organisation of production matters?

- Latin America: Underutilisation of land is a problem, as large mechanised farms employ few workers and leave a lot of land unutilized. It is believed to be a problem of colonial legacy.

- Asia: Over-utilisation of land is a problem, as land is used intensively reducing productivity and income.

The puzzle of sharecropping tenancy

- In Asia agriculture is often organised under a tenancy system – by leasing out land.

- The owner leases out the land to a farmer on condition that the **output** will be shared in certain ratio (usually 50:50 basis)

- Sometimes cost-sharing may be involved as well, and sometimes not.

- The farmer (sharecropper) will be responsible for labour cost.

Inefficiency of sharecropping

- Best choice of L = L** where $w=MP_L$.

MP$_L$/2

B

MP$_L$

A

w

L*   L**
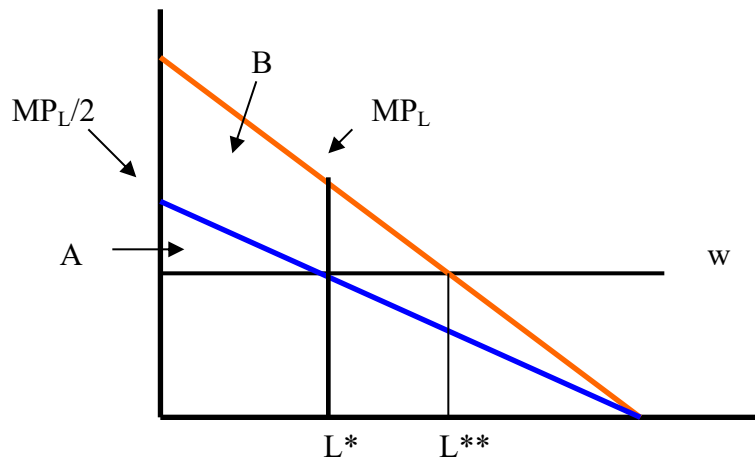
Suppose the sharing rate is 50:50.
The sharecropper will choose
Labour such that $w=MP_L/2$.

Clearly less labour is employed,
And the surplus is not maximum.

The sharecropper gets a surplus of A.
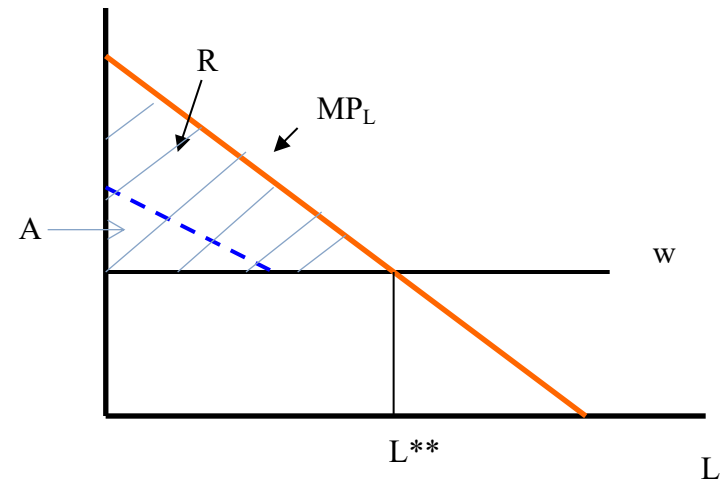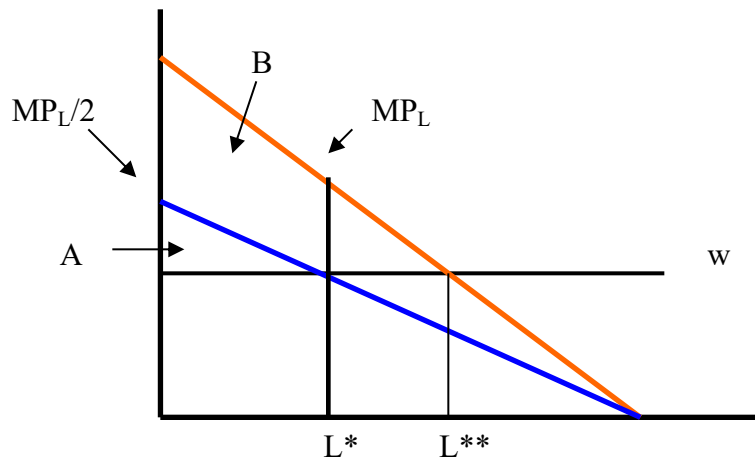The landowner gets a share =area B.

Efficiency of fixed rent tenancy

- If the landlord could rent out the land for a fixed amount R, then production would be efficient.

Tenant will choose L**.
The landowner can get R.
The tenant's labour cost will be covered.
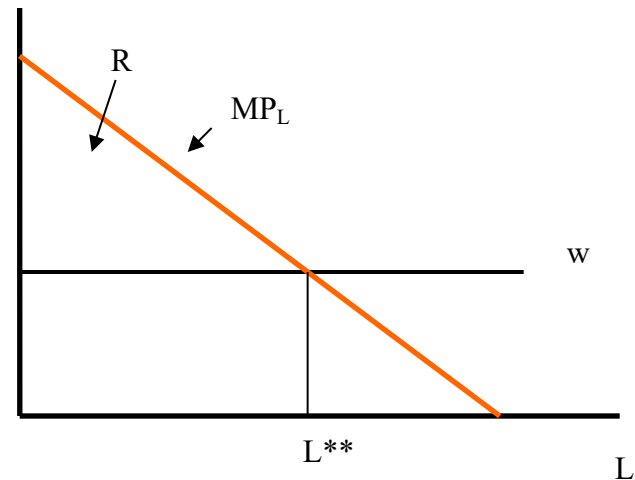
Inefficiency of sharecropping

• Alfred Marshall argued that Sharecropping generates smaller surplus as compared to fixed rent tenancy.

Under sharecropping the owner gets a surplus of B, and the tenant gets A (as surplus over and above his cost).
Under fixed rent tenancy the landlord gets much more – the whole area R. Even if he gives away an area A to the tenant, he will still earn more under Fixed rent tenancy.

Tenancy and landholding: Asia and Latin America

Country	Average Operational Farm Size (hectares)	Percentage of Farms and Farmland				Gini Coefficient of Land Concentration	Percentage of Tenanted Area in Total Farmland		Percentage of Share Tenancy in Tenanted Land[b]
		Below 5 Hectares		Above 50 Hectares			Pure Tenancy	Total[a]	
		Farms	Area	Farms	Area				
Asia									
Bangladesh	1.6	90.6	67.6	n.a.	n.a.	0.42	n.a	20.9	91.0
India	2.3	88.7	46.7	0.1	3.7	0.62	2.4	8.5	48.0
Indonesia	1.1	97.9	68.7	0.0[c]	13.6	0.56	2.1	23.6	60.0
Nepal	1.0	97.2	72.1	0.0[c]	0.8	0.56	1.5	13.2	48.3
Philippines	3.6	84.8	47.8	0.2	13.9	0.51	21.4	32.8	79.3
Thailand	3.7	72.3	39.4	0.0	0.9	0.45	6.0	15.5	29.0
Latin America									
Brazil	59.7	36.8	1.3	16.3	84.6	0.84	6.1	10.2	n.a.
Costa Rica	38.1	48.9	1.9	14.5	79.7	0.82	1.2	9.0	9.4
Colombia	26.3	59.6	3.7	8.4	77.7	0.86	5.3	11.5	49.4
Peru	16.9	78.0	8.9	1.9	79.1	0.91	4.5	13.6	0.0[c]
Uruguay	214.1	14.3	0.2	37.6	95.8	0.82	19.1	46.3	4.7
Venezuela	91.9	43.8	0.9	13.6	92.5	0.91	4.5	2.4	n.a.

Source: Keijiro Otsuka, Hiroyuki Chuma, and Yujiro Hayami, "Land and labor contracts in agrarian economies: Theories and facts," *Journal of Economic Literature* 30 (1992): p. 1972. Reprinted with the permission of the American Economic Association.
[a]Area in pure tenant farms plus area in owner-as-tenant farms.
[b]Percent in area of pure tenant farms, except percent in total tenanted area for Bangladesh.
[c]Less than 0.05%.
n.a. = not available.

Why is sharecropping so widely practiced, if it is so inefficient?

- To get a full answer we need to consider yet another option for the landlord. He can cultivate the land himself using wage labourer; this arrangement is called wage tenancy.

- When we look at all three contracts and all other factors such as the weather uncertainty and monitoring difficulty of a worker, we see that the decision to lease out or not, depends on the risk attitudes of the involved parties.

Share cropping as a risk sharing device: Inefficient in a narrow sense, but optimal in the overall context

- Under wage tenancy (i.e. cultivating by self), all (weather-induced) risks are borne by the landlord.
- Under fixed rent tenancy all risks are borne by the tenant.
- Under sharecropping risks are shared by both parties. Hence this is preferred.
- In the literature the argument is pushed further by incorporating various other problems such information related uncertainty.

Sharecropping also helps to get credit

- Sharecroppers and fixed rent tenants do not get bank credit because they don't own the land.

- But the landlord can act as a lender by providing credit or arrange cost-sharing.

- Again, sharecropping proves a mutually beneficial arrangement.

Agricultural Growth: Challenges ahead

Subsistence farming in Africa

- Low-productivity subsistence farming resulting from:
    - very high labour intensive practices (only traditional tools used);
    - extensive and shifting cultivation practices;
    - shortage of labour at the beginning of rainy season.

- Problems determined by the increase of population density:
    - Inability of agriculture to keep pace with demographic increase.

AGRA: A promise for African Green Revolution

- A pan-African initiative AGRA works to achieve a food secure and prosperous Africa through the promotion of rapid, sustainable agricultural growth based on smallholder farmers, majority of them women.

- Better knowledge of soil quality, soil management, crop cycle, and better quality of seeds are already producing results for banana producers in Kenya, beans growers in Uganda, cereals farmers in Tanzania and pineapple growers in Ghana.

Large holdings in Latin America

- Agrarian Patterns in Latin America: Progress and Remaining Poverty Challenges
  - Apart from latifundios (large holdings) and minifundios (small farms) production occurs on family farms and medium sized farms.
  - Latifundios are relatively inefficient as landlords are not interested in farming and large farms typically entail higher transaction costs
  - Overall the sector seems to be doing well. Chile (diversification), and Brazil (biofuels)
  - Extreme inequalities still persist.

Persistence of sharecropping in Asia

- Transforming Economies: Problems of Fragmentation and Subdivision of Peasant Land in Asia

  - Contemporary landlordism in India and Pakistan involves absentee landlordism and persistence of sharecroppers and tenant farmers

  - Rapid population growth resulted in more fragmentation and peasant impoverishment