Private Investment, Farm Size and Global Food Security

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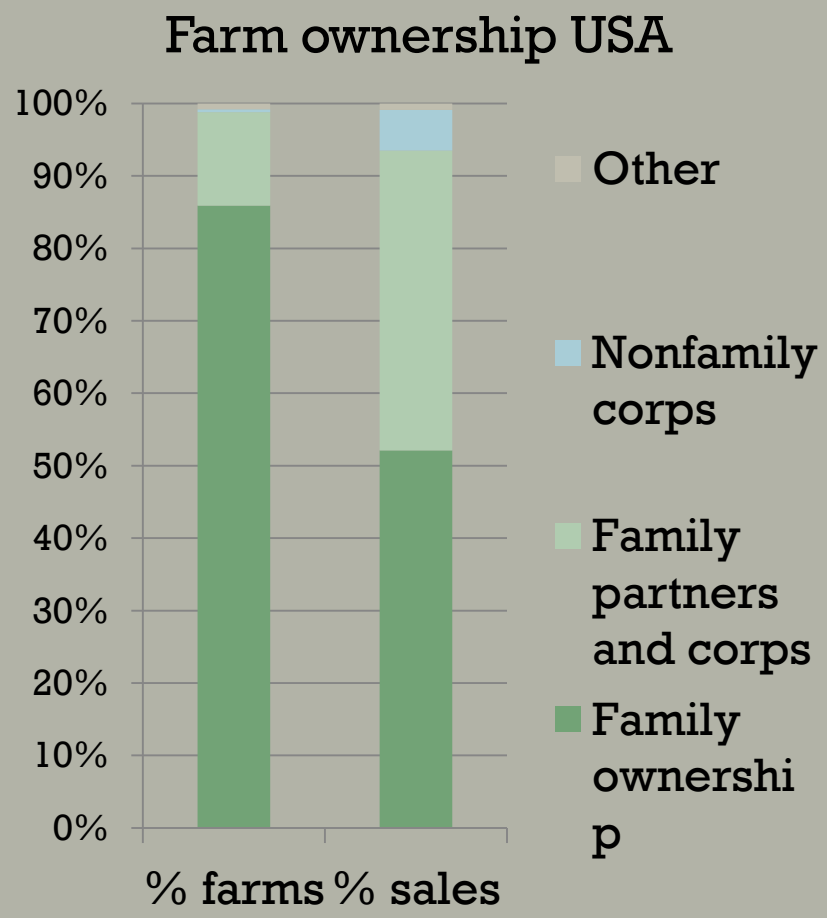
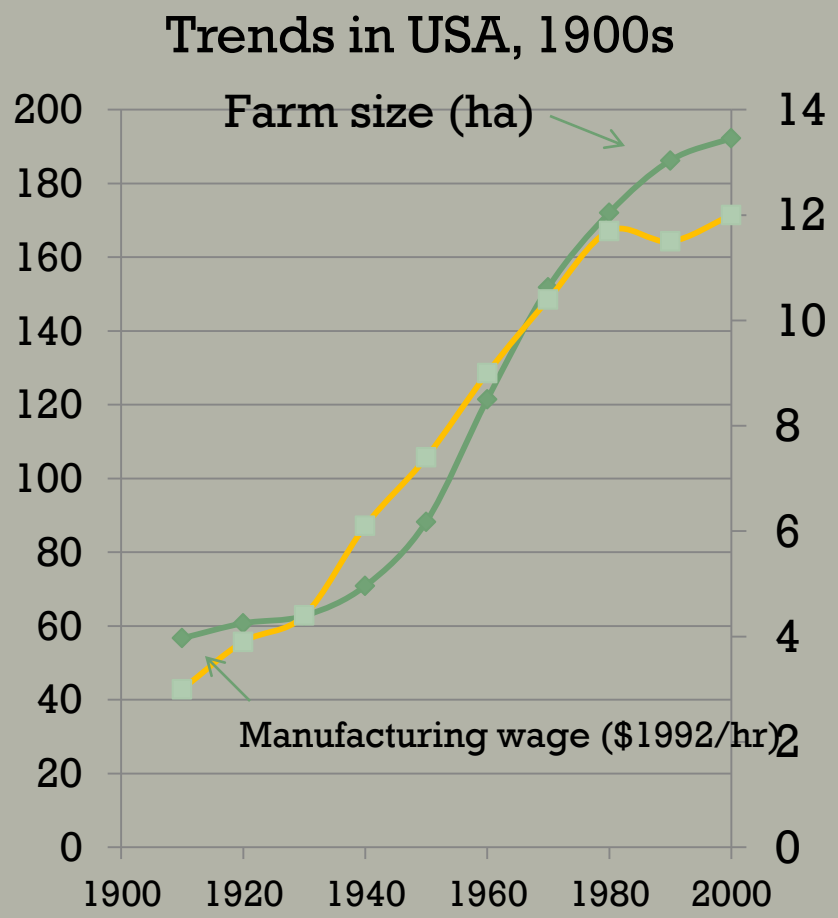
National Academies of Sciences
May 2-4th, Washington DC

1. Consensus Around a Development Agenda Based on Family Farms

- Family farms, including smallholders, remain the main organizational model in both poor and rich countries
  - Owner-operated employing mostly family labor
- Family farms widely accepted as being most efficient (Lipton 2009, many others)
  - Difficulty of labor supervision in spatially dispersed production
  - Flexibility management of land and labor resources to fit seasons and markets (Allen, 2004)
  - Local knowledge advantages the owner-manager

Size of Family Farm Increases with Rising Nonfarm Incomes





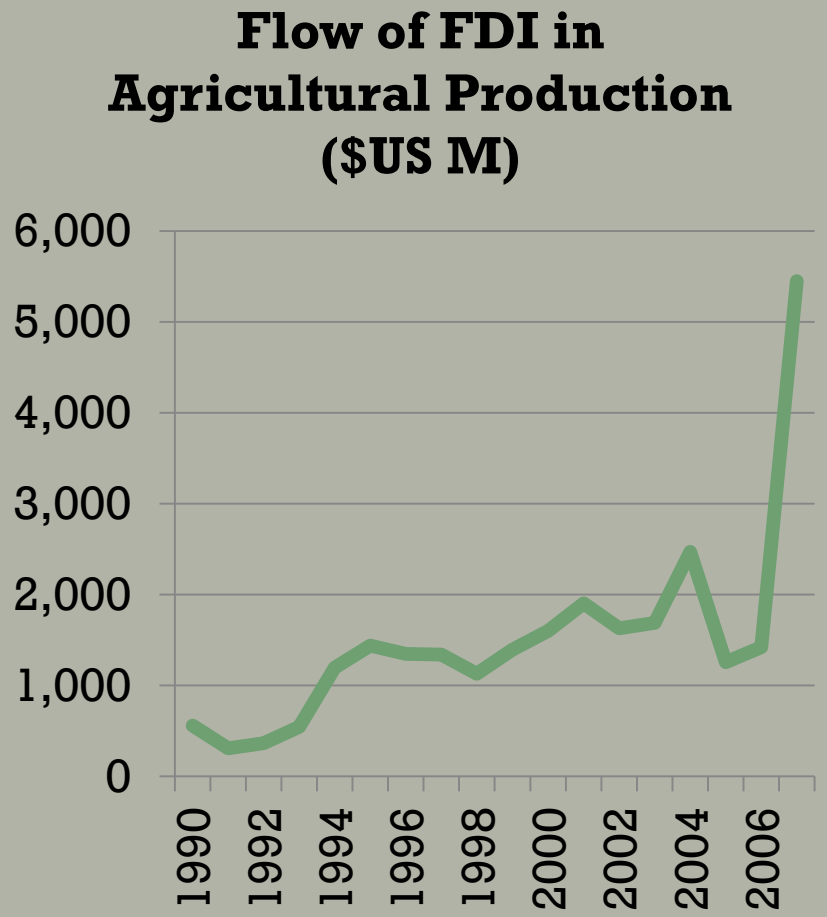
Gardiner, 2002

2. Consensus: Smallholder Productivity Growth Promotes Equitable Development

- Strong growth and employment linkages
  - Example of green revolution
  - Unequal incomes reduces poverty reduction effects of agricultural growth (Christiaensen and Demery, 2011)
- Local community development and better services in a family farm agrarian structure
- Re-affirmed in World Development Report, 2008

3. Consensus: Agricultural Success Requires Market-Led Approaches

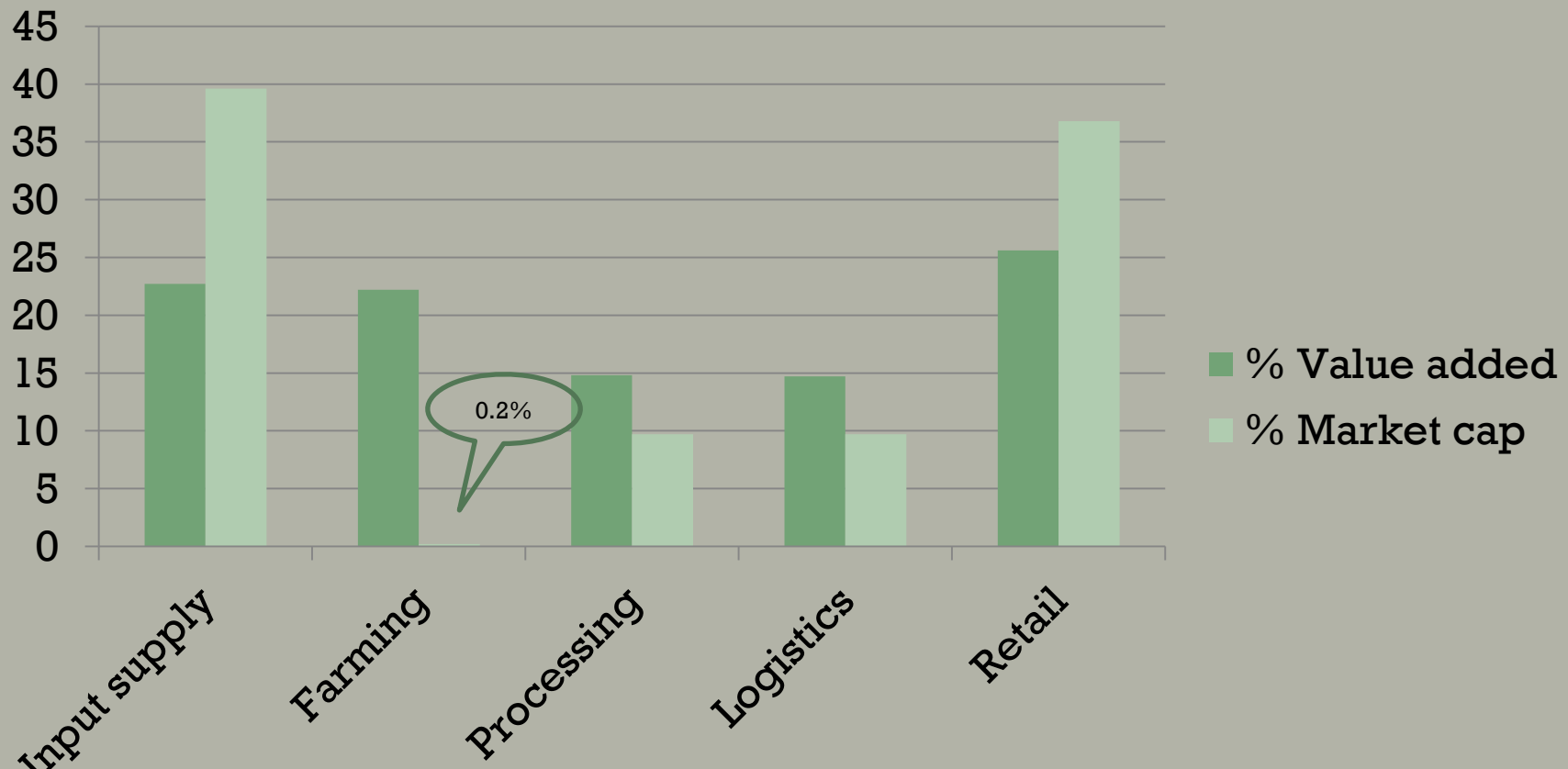
- Demise of parastatals
  - Role of agribusiness in input, output markets
- Liberalization of trade
- Encouragement of private investment
  - Huge investment gap
  - Strong private interest since commodity price trends reversed



Source: WIR, 2009

Corporate Investment in Farming Globally is Negligible

300 Publicly Listed Companies in the Agricultural Value Chain



Integrated companies not included

Since Liberalization Major Investments in Farming in Developing Countries

- Latin America as a global breadbasket
  - Emergence of very large farming companies mostly national (El Tejar, Los Grobos, Adecoagro, Cresud, SLC Agricola, Cosar, Maggi)
    - Argentina: Top 30 companies total 2.4 m ha (mostly rented).
      Brazil Cerrado: 20% of the farmland foreign owned
- RUK as emerging breadbasket
  - Emergence of "superfarms". Ukraine: Top 40 companies manage 4.5 M ha; Russia: Top 30 companies 6.7 M ha (mostly home grown companies)
- SE Asia
  - Palm oil: 8 of world's 25 largest agric prod. companies
- Africa—Media reports of 40 M ha in 2008-09

World's Largest Farms are in Developing and Transition Countries

- Large in land area, capital invested and sales (often ~ $US1billion farm prod)
  - Sime Darby (oil palm)—Malaysia, Indonesia and with 600 K ha + (220 k planned in Liberia)
  - Cosan (sugar-ethanol)—Brazil with 300k+ ha and 300k ha of contract growers (double with Shell)
  - Fibria (pulp)—Brazil, 500 k+ ha Eucalyptus
  - El Tejar (grains)—Argentina/Brazil 1,000k+ ha Argentina+
  - Ivolga (grains)—Russia+ 1,000 k+ ha
  - El Shaikh Mustafa El Amin Co (grains)—Sudan 250 K ha
- Mostly home grown companies operating regionally
- (Also large companies in horticulture and livestock)

Why? Evidence of Efficiency in Some Settings

- Sometimes economies of size
  - Plantation crops through processing
  - Opening new lands (need K, lack L)
  - Standards and certification—fixed costs
- Able to overcome diseconomies of size:
  - New technologies (ZT, ITs)
  - Managing risks thru diversification
  - Access to cheaper global finance, bargaining power in input and output markets
  - Vertical integration to overcome poor logistics

Institutional Innovations Evolved for Managing SuperFarms

- Specialized management companies combine production factors
  - Argentina—"Pools de Siembra"
    - Lease land and machinery
    - Assetts—Professional management
  - State of art IT systems and satellite farming

Continuation of Perverse Incentives

- Distorted capital markets such as subsidized interest rates
  - e.g., Brazil
- Regulations that promote mechanization
  - Labor laws that add transactions costs
- Low or zero land prices that encourage risky investments and speculation
  - Mozambique $0.60/ha. Lots of jatropha
  - Forest extraction policies (Indonesia)

Private Investment in Africa: An Opportunity and a Risk

A MAJOR OPPORTUNITY

- Fills a huge investment gap
- Transfer of technology and know-how
- Export development
- New industries--biofuels
- Employment generation
- Opening of remote

WITH SIGNIFICANT RISKS

- Lack of land markets—rights of users
- Enclaves with few local benefits
- Negative environmental impacts (forests)
- Risks of highly unequal agrarian structure
  - Governance, services

Africa: Myths and Reality

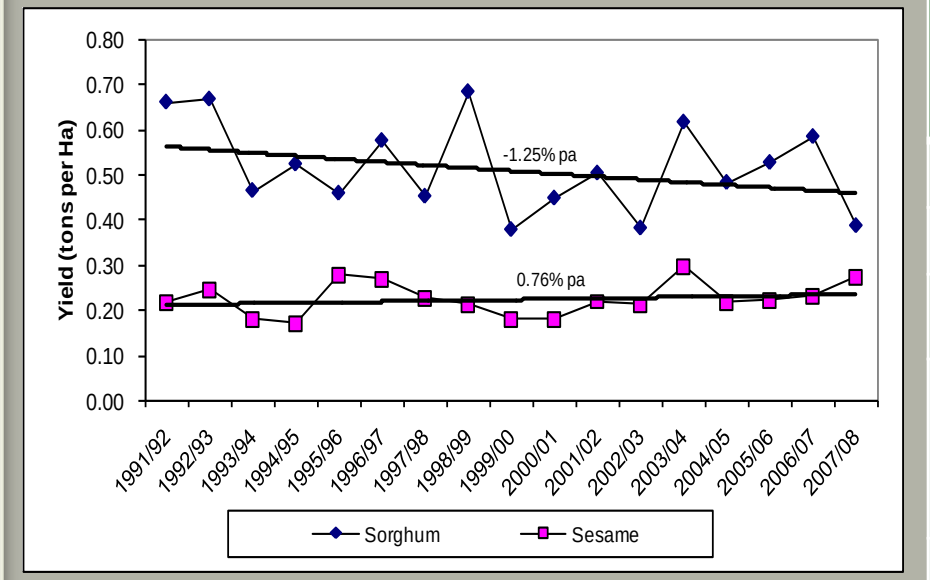
- Reality
  - Lack of land markets and transparency in land transfers
- Media reports > applications > approvals > actual investments
  - Tanzania: 4.4 m ha requested, 1.5% approved
  - But significant in Ethiopia, Mozambique, Liberia, Sudan, Ghana (over 5 M ha total, 2004-09)
- Very heterogeneous by country
  - Types of investors, commodities (biofuels, food,..)
  - Benefits quite variable but many are lose-lose

Sudan as a Breadbasket?

- Semi-mechanized farming schemes 1970s+
  - Investors from Gulf and state credit
  - (Similar scheme in Ethiopia)
- Converted up to 11 M ha to large farms
  - Average over 1000 ha, some farms >200,000 ha
- Problems well documented
  - Trampled on rights of local pastoralists, land conflicts
  - Created few jobs
  - Soil degradation and destruction of natural environment

Sudan: Lack of Suitable Technology

Mechanized rainfed system, Sudan; Lose-lose investments



Technology		Size (ha)	Yield (t/ha)	Cost ($/t)
Existing	Company	8000	0.5	277
	Large farm	400	0.4	495
	Smallholder	20	0.5	204
Zero tillage, fertilizer and others	Large farm	400	4.0	125
	Smallholder	20	3.0	143

Source: Min of Agriculture, 2009

Many Investors Lack Expertise in Tropical Agriculture

HISTORY OF FAILURE OF LARGE-SCALE FARMS IN AFRICA

- 1940s—British groundnut scheme in Tanzania
  - Overlooked smallholders
- 1970s—Sudan mechanized schemes
- 1980s--Saskatoon on the savannah—wheat in Africa
- 2000s—EU Jatropha investors in Africa

UPLAND RICE INVESTOR IN LIBERIA, 2009?

The Challenge: Potentially Strong Complementarity of Assets

Smallholders/ Communities with land rights

- Land
- Labor
- Local knowledge

"Good" Companies

- Capital and risk
- Access to markets and technology
- Specialized knowledge

Combining Assets
1. Contracting of Smallholders and Their Associations

(Settled areas, some horticulture, oilseeds, sugarcane)

Smallholder production		Company
Land	←	Capital (working)
Labor	←	Access to markets and technology
Local knowledge	←	Specialized knowledge

Combining Assets
2. Large-scale Production

(Low population density areas, grains, plantations)

Communities

- Land
- Labor
- Local knowledge

Company production

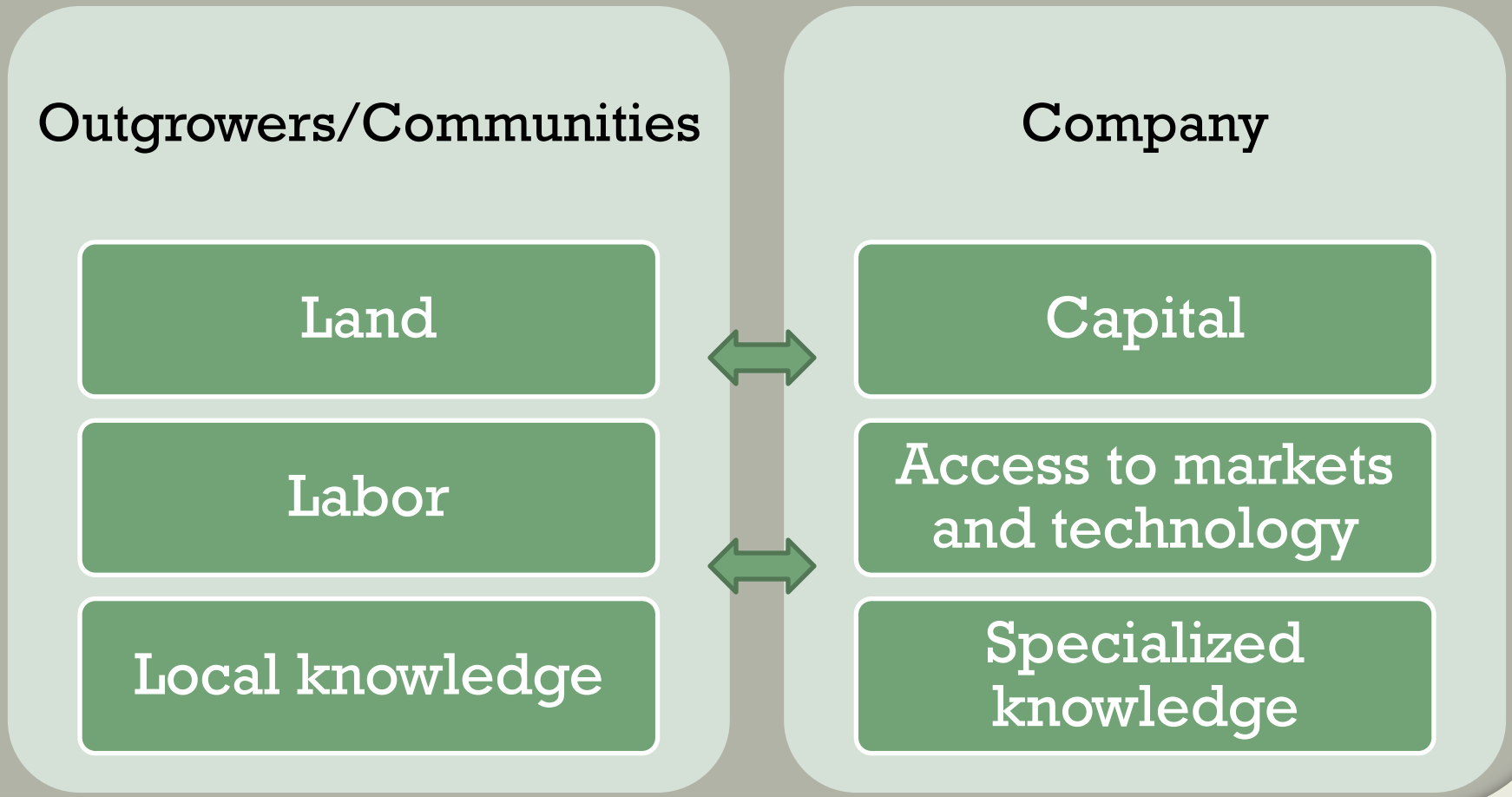
- Capital
- Access to markets and technology
- Specialized knowledge

Employment Benefits vary Widely

Commodity	Jobs/1000 ha	Invest $/ha	Invest $ per job
Jatropha, Tanzania	600	$600	$1,000
Oil palm, Indonesia	350	$4,000	$11,400
Sugar-ethanol manual-Braz	700	$14,000	$20,000
Sugar-ethanol mech--Braz	150	$14,400	$96,000
Plantation forestry-production + proc--Uruguay	20	$7,000	$360,000
Sorghum Sudan—semi-mechanized	53	$900	$17,000
Wheat-soybean irrig--Zambia	16	$6,000	$375,000
Soy—fully mechanized-Brz	18	$3,600	$200,000
Grains Ukraine fully mechanized	10	$450	$45,000

Combining Assets
3. Partnerships with Large Scale

(Both large and small-scale: perennials and irrigated areas with high upfront investments)



Many Cases Where Little Complementary and High Risks

Communities

- Land (rights?)
- Labor
- Local knowledge

Company production

- Capital
- Access to markets and technology
- Specialized knowledge

Have Large Farms Contributed to Global Food Security?

- Food supply and prices—yes
Region	Product	Increase exports from 1990	% total increase exports from 1990
LA	Soy	62 M t	66%
LA	Sugar	28 M t	100%
SE Asia	Veg Oils	28 M t	55%
RUK	Grains/Oilseed	80 M t	

- Access to food—not often
  - Fewer jobs and incomes relative to smallholders (except some plantations with outgrowers)
- Sustainability—very mixed results

Implications for Global Food Security

- Agriculture will continue to be based on family farming, often small-scale
- But private investment is critical to raising productivity
  - Upstream, downstream and onfarm
- Need to exploit a variety of institutional models that might involve range of farm sizes
  - Evidence that large-scale farms can be efficient
- First priority everywhere to level the playing field
  - In Africa—technology, land rightsand fair deals for local

Principles for Responsible Agricultural Investment (Also Private Roundtables)

Area of concern	Key Issues
Property rights	• Long established occupancy rights are recognized • Relevant rights are publicly recorded • An accountable & representative structure for local decision-making is in place
Voluntary transfers	• Expropriation not used to transfer land to private interests • Processes for transferring land involve informed consent by existing users • Proceeds from land transfers are fair and accrue to actual users
Transparency	• Relevant information (land prices, contracts) publicly available • Agreements are understood by the parties and can be enforced • Public sector responsibilities add value, are clearly assigned, performed effectively
Economic viability	• Effective mechanisms to check technical viability & economic feasibility in place • Investments are consistent with local strategies for development • Adherence to agreed terms is monitored and enforced
Environmental & social sustainability	• Areas unsuitable for agricultural expansion are properly protected • Environmental policies are clearly defined and adhered to • Social safeguards are implemented