Integrated **P**overty **A**ssessment for **L**ivestock **P**olicy

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Livestock and Poverty in West Africa
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A Living from Livestock
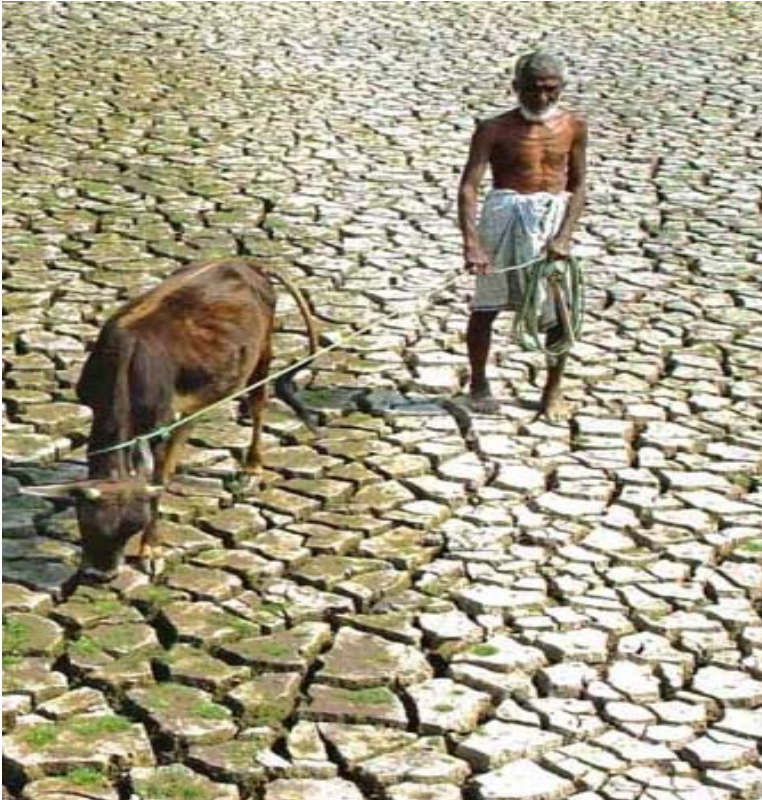Pro-Poor Livestock Policy Initiative

Contents

1. Poverty, Livestock & Livelihoods
2. IPALP Methodology
3. IPALP Applications
4. Conclusions & Discussion

A Living from Livestock
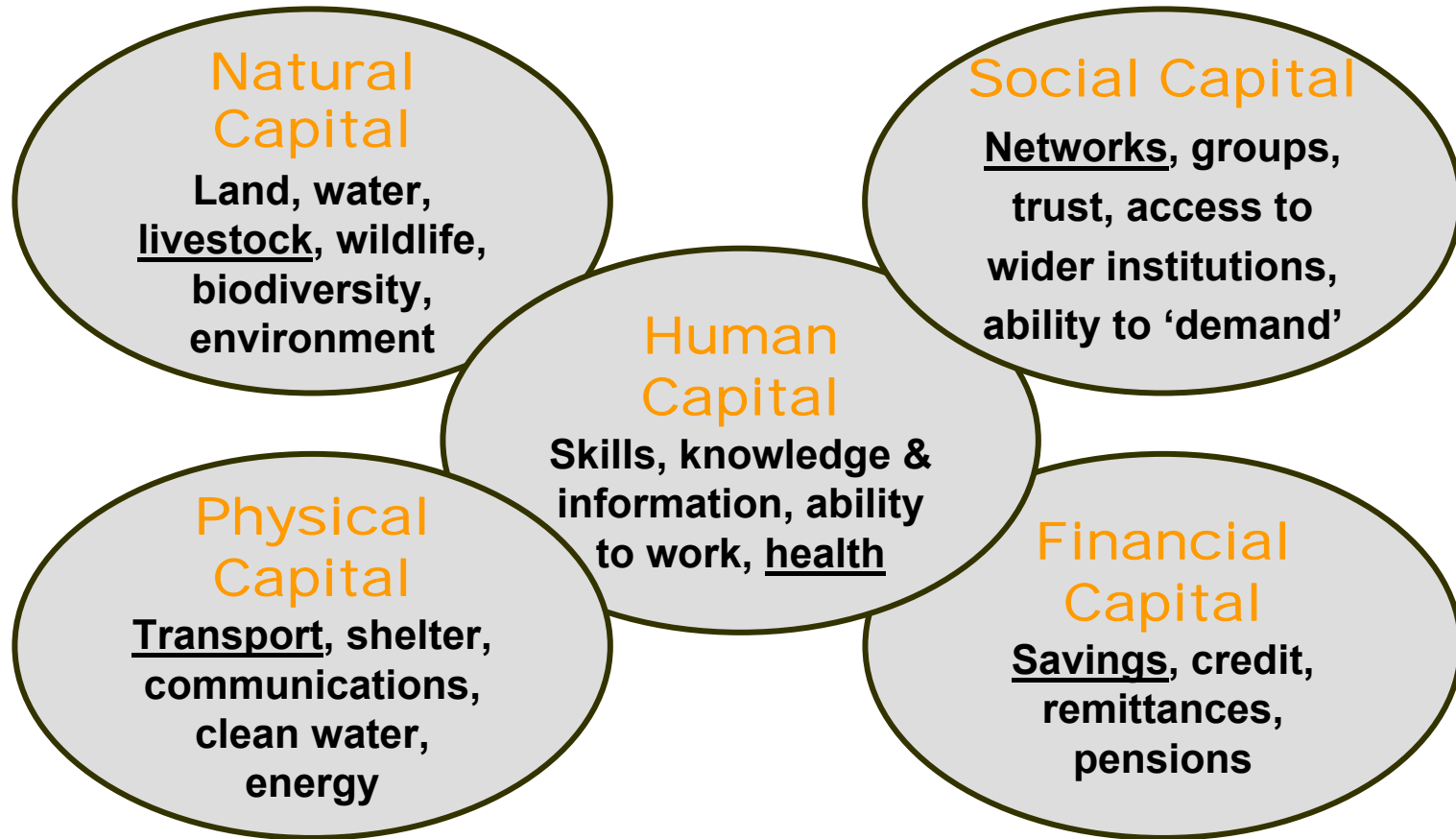Pro-Poor Livestock Policy Initiative

1. The Extent of **Extreme** Poverty

- Globally 1.2 billion **extreme** poor (<1USD/day)

- 800 million **extreme** poor in agriculture

- 600 million **extremely** poor livestock keepers

Livestock and Livelihoods

Natural Capital

Land, water, <u>livestock</u>, wildlife, biodiversity, environment

Social Capital

<u>Networks</u>, groups, trust, access to wider institutions, ability to 'demand'

Human Capital

Skills, knowledge & information, ability to work, <u>health</u>

Physical Capital

<u>Transport</u>, shelter, communications, clean water, energy

Financial Capital

<u>Savings</u>, credit, remittances, pensions

Livestock: Economic Perspective

- More income from **natural resources** through:
  - Access to common land resources
  - Utilization of marginal resources, e.g. 'waste land' not suitable for crops
  - Re-cycling crop by-products
  - Increase in output of crop production (fertilizer)
  - Savings

- More income from **family labour** through:
  - Better use of heterogeneous labour resources
  - Balance seasonal labour demand for crop farming
  - Use of labour for processing of primary products (value added capture)
  - Release labour for more productive purposes (animal traction)

The Role of Economic Analysis

Detailed economic analysis can support policy and complement technical assistance in three ways:

- Improve visibility and strengthen policy dialogue about economic fundamentals, including
  - ✓ Trends
  - ✓ Heterogeneity/complexity
  - ✓ Linkages
- Enable more effective targeting
  - ✓ Identification of stakes and stakeholders
  - ✓ Recruitment of beneficiaries to support more effective policy, and
  - ✓ Anticipation of adjustment needs for others.
- Facilitate assessment, *ex ante*, *ex post*, and during the course of projects.

2. IPALP: Introduction

- To support the larger agenda of its Pro-Poor Livestock Policy Initiative (PPLPI), FAO has developed a research facility to evaluate economic effects of livestock and policies related to them.

- Integrated Poverty Assessment of Livestock Policy (IPALP) is a suite of analytical methods that elucidate local incidence of national and regional policies toward the livestock sector.

- Among the livestock policies to which IPALP will be addressed are animal health and disease control strategies, including HPAI.

IPALP: Structure

Livestock will help the poor if its adoption is compatible with local responses to regional and national economic conditions and incentives.

To capture linkages across the economy and from the top down, a four-fold modeling framework is used. Each of these four modules has now been developed in prototype form.

Data Development

Policy Modeling

Digital Mapping

Living Standards Analysis
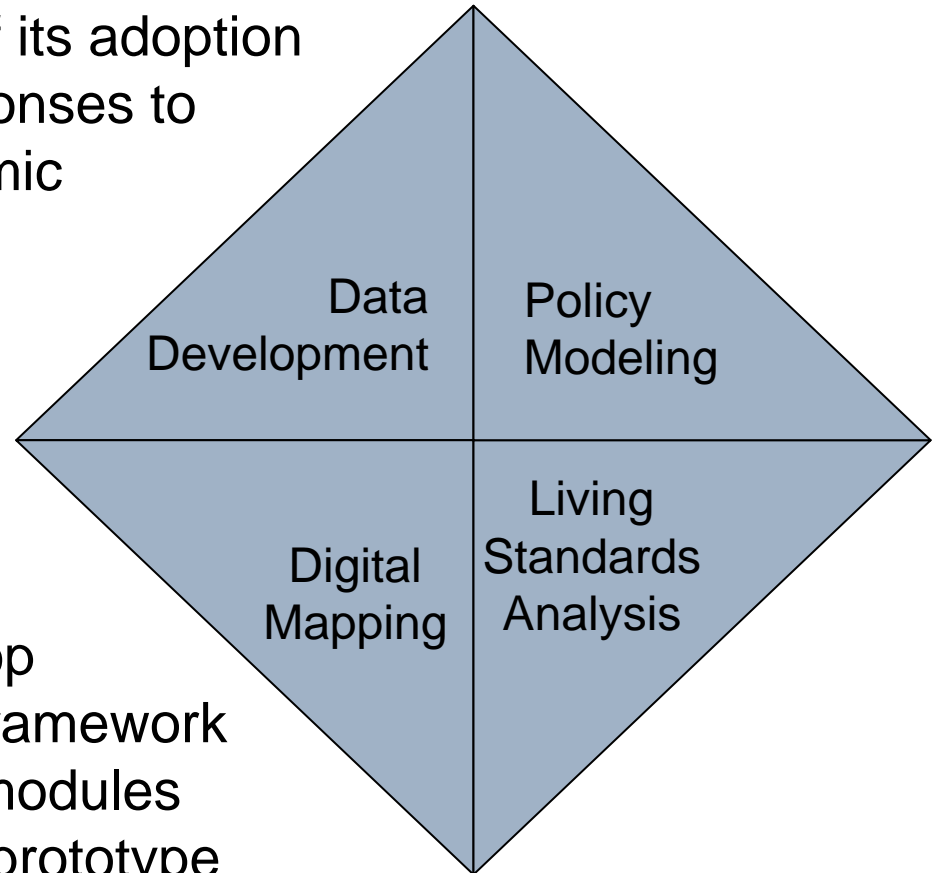
IPALP: Detailed Methodology
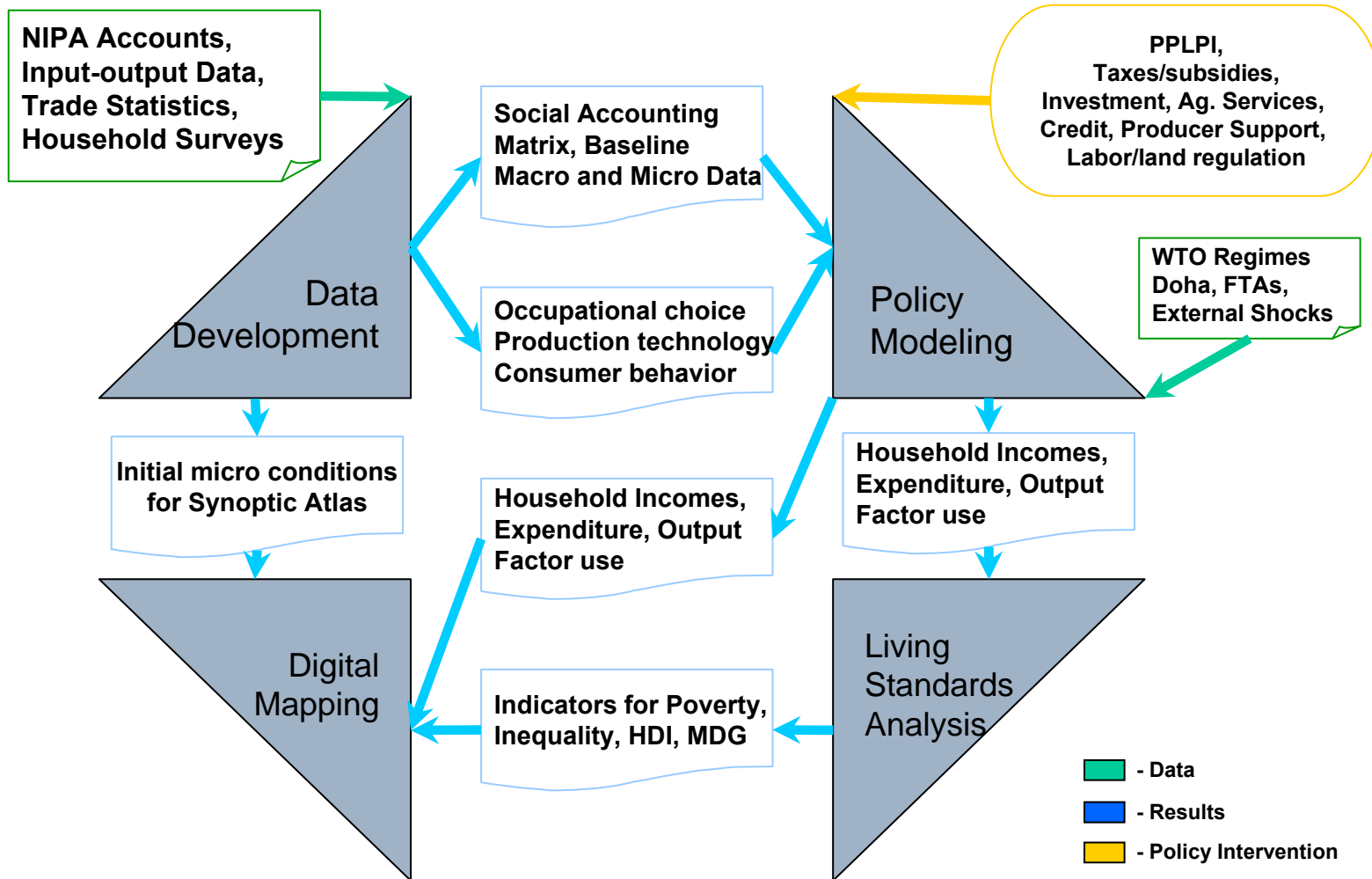
IPALP: Components

1. **Data development**
   A comprehensive inventory of data related to the overall economy, including macro and micro information, with particular reference to rural conditions and the livestock sector.

2. **Policy Modelling**
   With a highly disaggregated dynamic CGE forecasting model, a baseline scenario for growth is compared to a variety of national policy scenarios, including PPLPI, generic development strategies, trade policy, WTO accession, market reform, tax policies, etc.

3. **Living Standards Assessment**
   Using the microeconomic results obtained from the previous two components, we will apply state of the art assessment tools to evaluate the effects of PPLPI and other policies on poverty, inequality, and other living standard and human development indicators.

4. **Digital Mapping**
   GIS mapping is applied to data on initial conditions and results of policy simulations. This synoptic economic atlas provides a transparent set of assessments that can be widely disseminated and compared across case studies.

3. IPALP Applications

1. Initial conditions: Vietnam

2. Linkage analysis: Senegal

3. Policy simulation:

   - Livestock promotion

   - Market access

3.1 Livestock Ownership in Vietnam
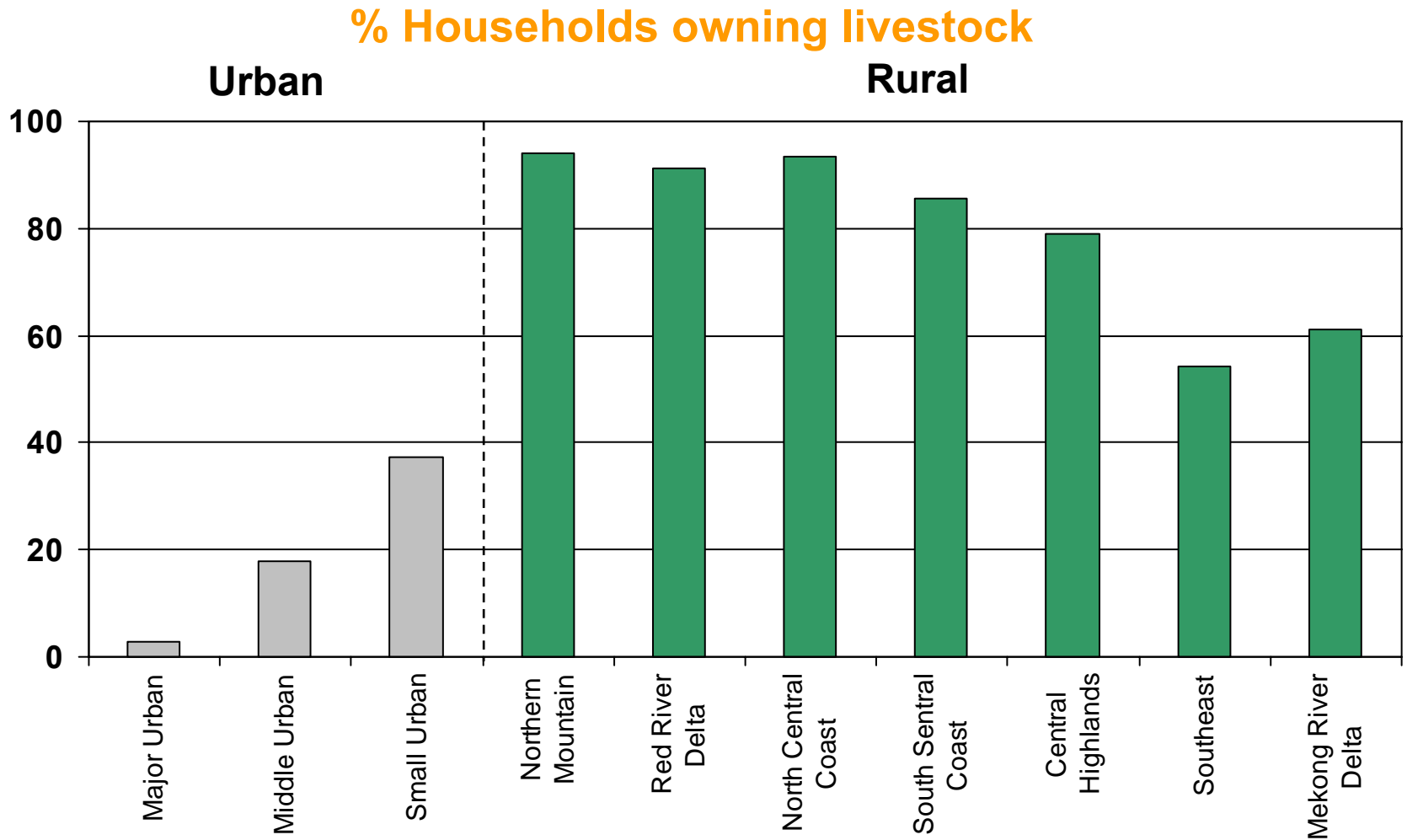
% Households owning livestock

Urban **Rural**

Source: 1998 VLSS

The chart shows the percentage of households owning livestock across regions, with a y-axis from 0 to 100.

Urban categories: Major Urban, Middle Urban, Small Urban

Rural categories: Northern Mountain, Red River Delta, North Central Coast, South Sentral Coast, Central Highlands, Southeast, Mekong River Delta

Vietnam: Poultry Income
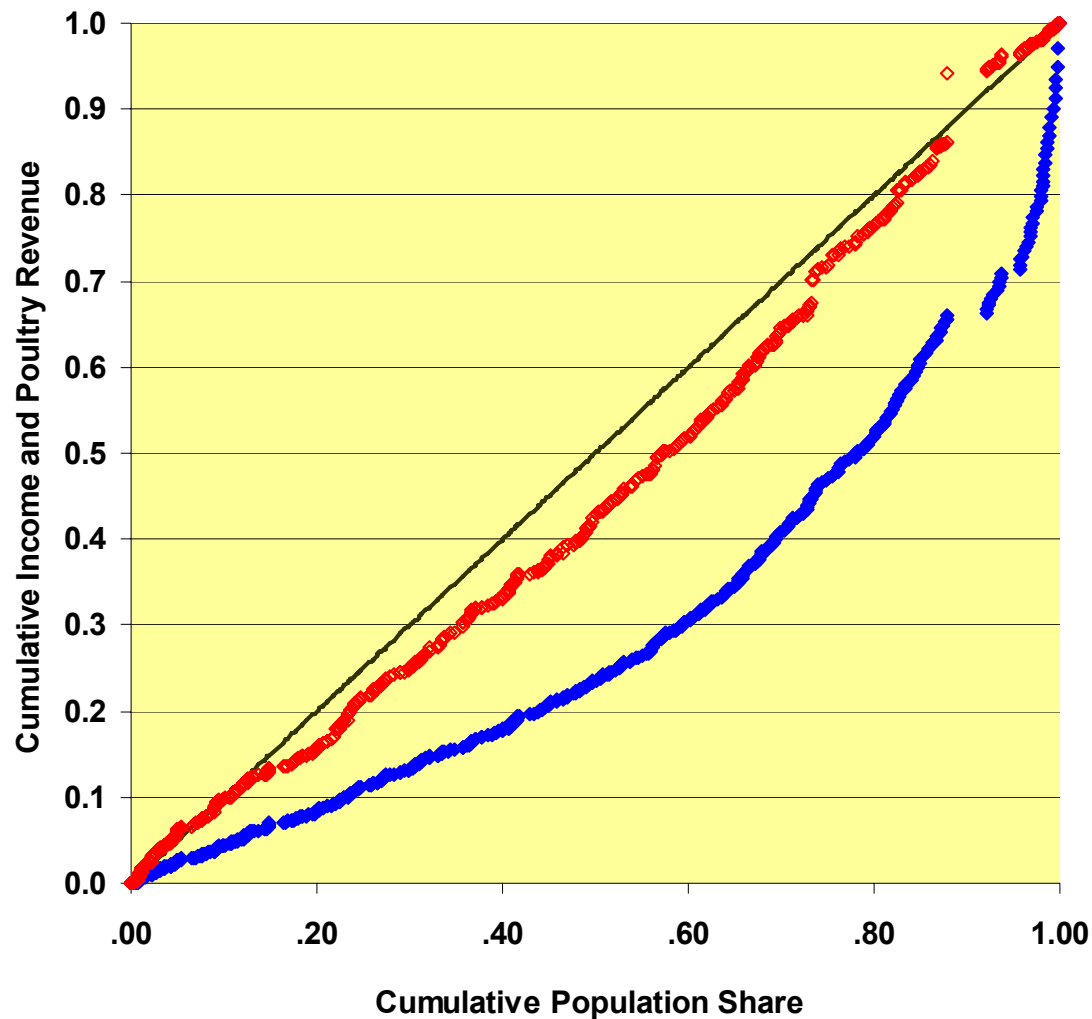
Poultry income is far more equitably distributed than total income !

Legend:
- ◆ Total Income
- ◇ Poultry Income
- — Equality

X-axis: **Cumulative Population Share**
Y-axis: **Cumulative Income and Poultry Revenue**
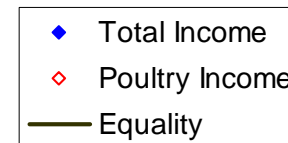
Livestock and Savings

Pigs are important to both income and savings, cattle/buffalo more to savings
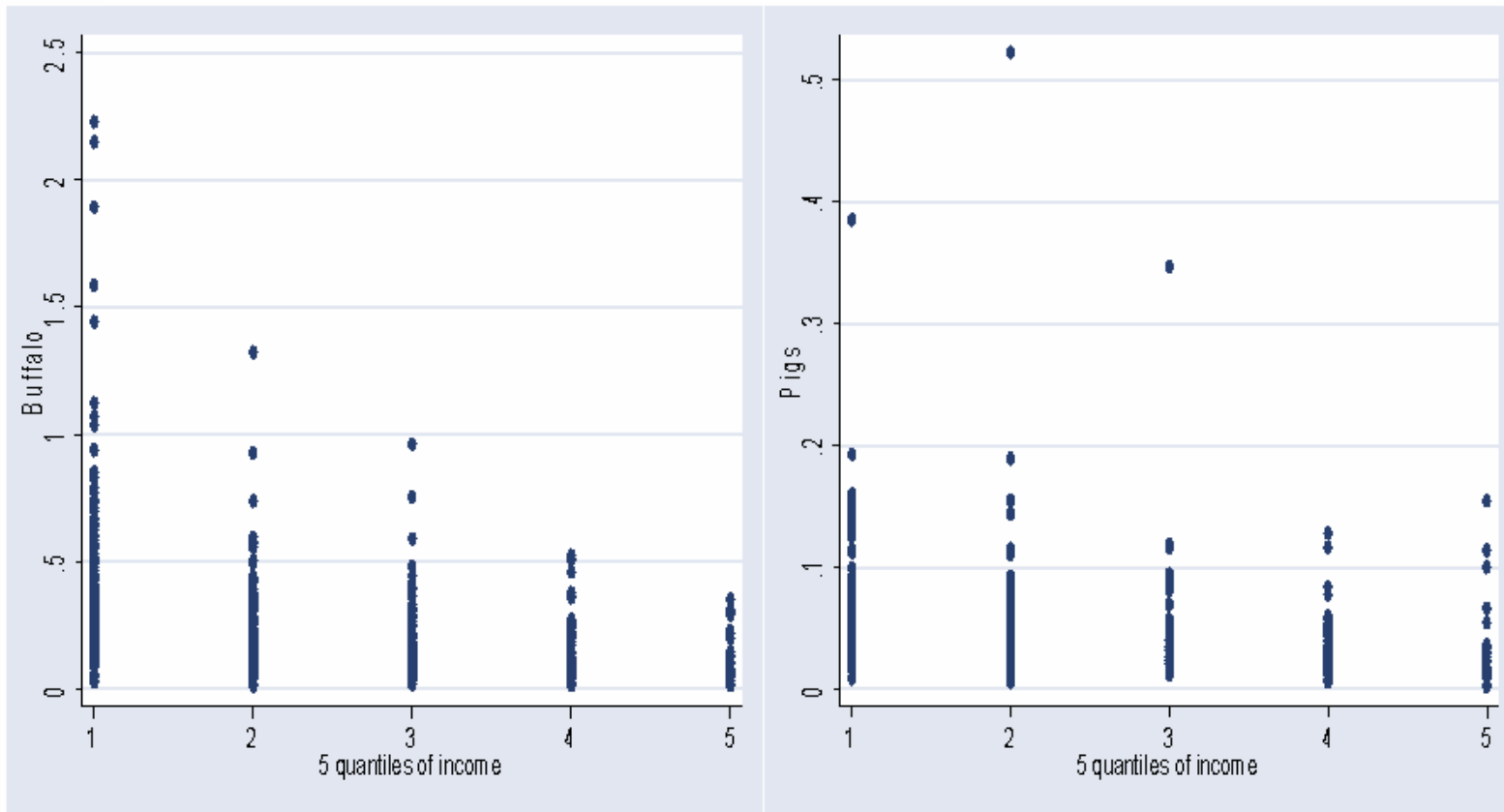
Vertical axes measure Buffalo and Pig asset values as a multiple of HH income.

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Commercialization of Rural Production

	1993 Marketed Share in			1998 Marketed Share in		
Quintile	Crop Otuput	Ag. Output	Monetized Income	Crop Otuput	Ag. Output	Monetized Income
Poorest	23	34	53	30	33	57
2	26	29	56	37	46	67
3	31	43	66	39	46	72
4	35	45	71	44	51	78
Richest	42	49	74	50	56	85
Total	30	38	63	38	45	70

Source: VLSS

Subsistence rates are high, therefore the marginal income effect of higher productivity will be greater, the poorer the household.

Reasons for Improved Welfare
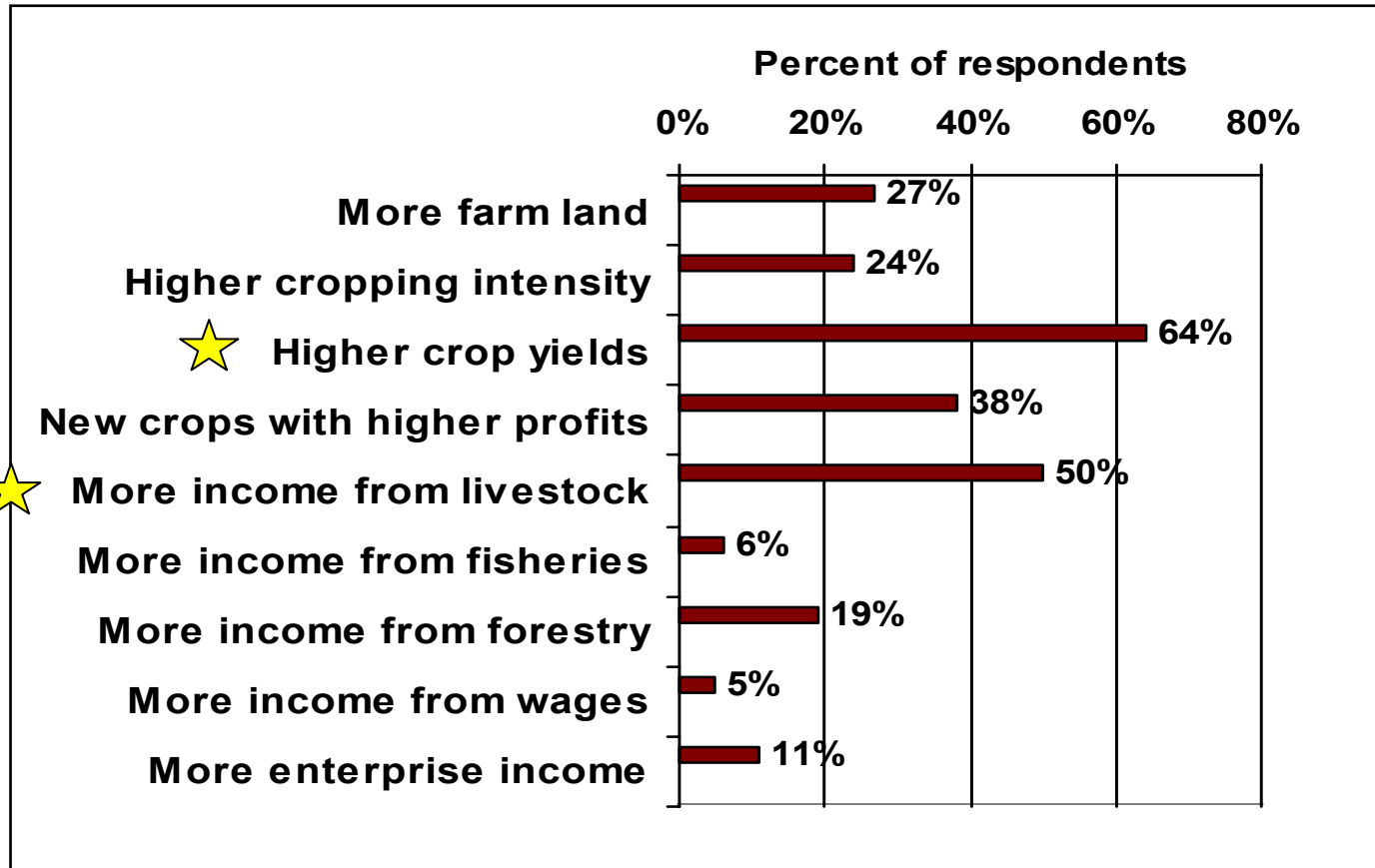
Percent of respondents

| | 0% | 20% | 40% | 60% | 80% |

- More farm land — 27%
- Higher cropping intensity — 24%
- ⭐ Higher crop yields — 64%
- New crops with higher profits — 38%
- ⭐ More income from livestock — 50%
- More income from fisheries — 6%
- More income from forestry — 19%
- More income from wages — 5%
- More enterprise income — 11%

Source: IFPRI

Usefulness of Public Assistance

% of responses
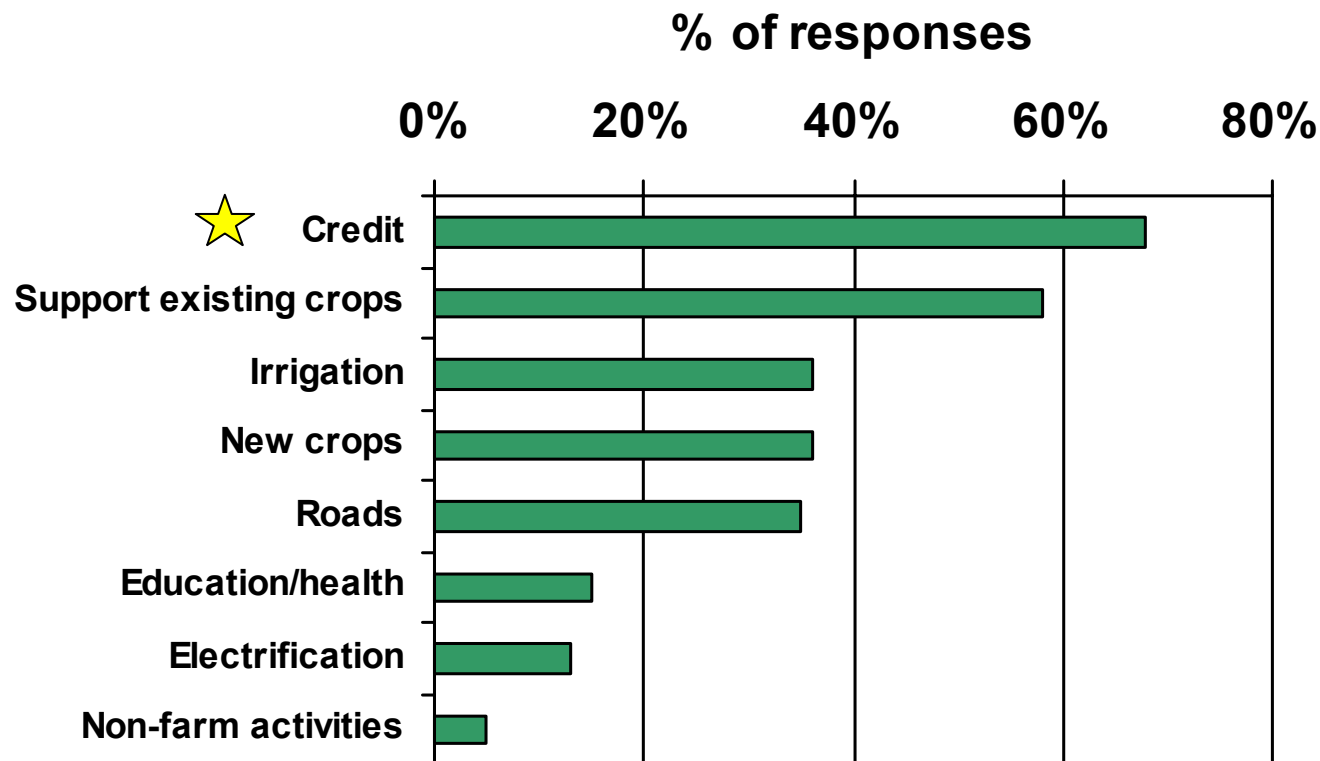
Source: IFPRI

Likelihood of Marketing Livestock by NMR Households (Logit regression results)

Significance of Remittance Income and Purchased Inputs reveals a cash constraint in livestock promotion.

Statistical Significance

| | -10 | -5 | 0 | 5 | 10 | 15 | 20 |

- Agricultural Income
- ★ Remittance Income
- Other Household Income
- Household Size
- HH Percent Skilled Labor
- Labor in HH Employment
- ★ Purchased Farm Inputs
- Land Area
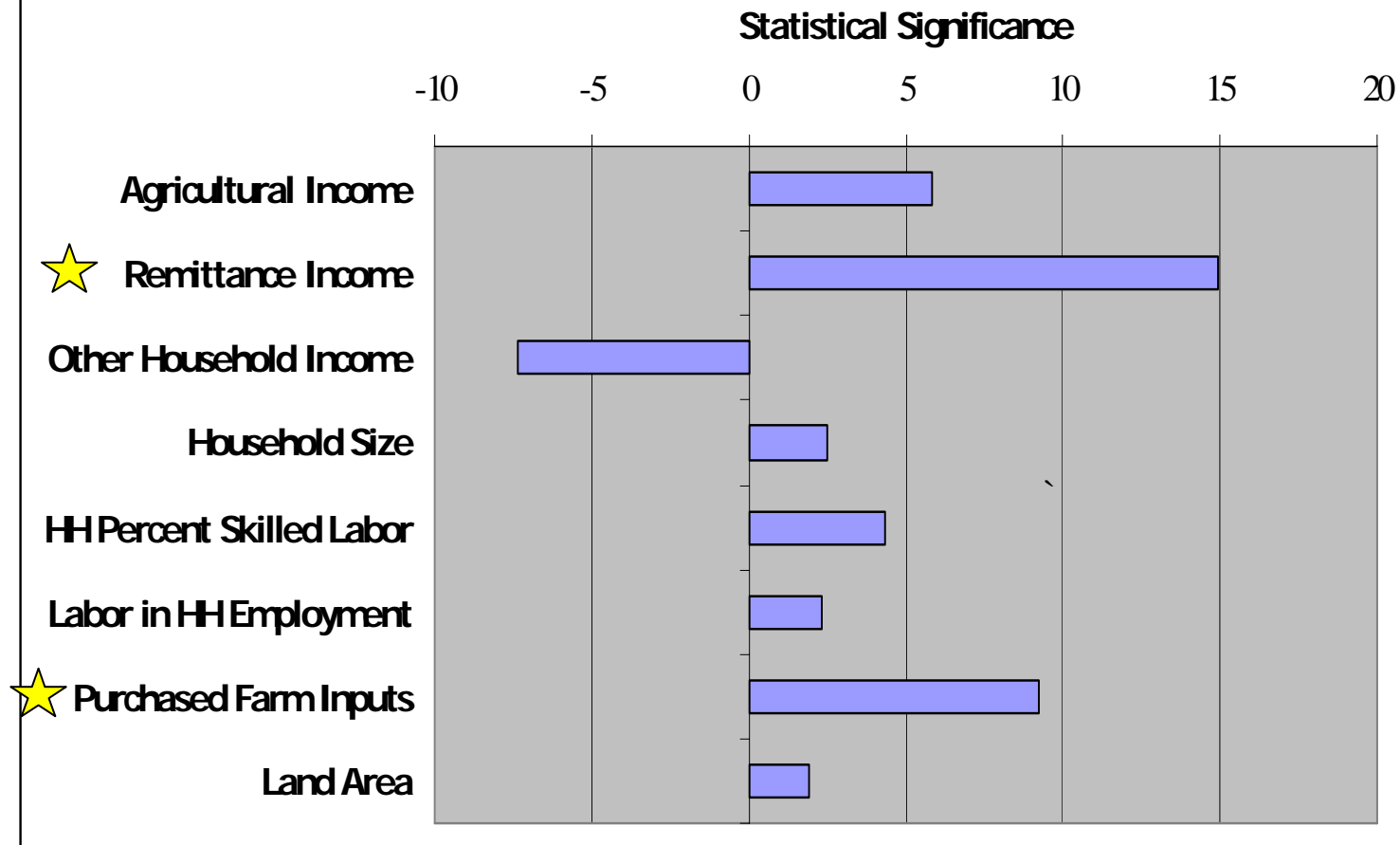
3.2 Linkage Analysis with SAMs

- With Social Accounting Matrices (SAMs), multiplier analysis is a convenient way to examine livestock's linkages across the economy.

- We have developed five SAMs for Vietnam and three for Senegal, working with different aggregations to focus on a variety of income-expenditure linkages.

Multiplier Linkages to Households
Vietnam (Vn) and Senegal (Sn) Compared

Because of their more diverse linkages to the economy, higher income groups generally enjoy larger multiplier effects.

Legend:
- VnPoultry
- VnPig
- VnCattle
- VnOthLvstk
- SnLvstk

Y-axis: Housedhold Income Multipliers

X-axis categories: HRur01, HRur02, HRur03, HRur04, HRur05, HUrb01, HUrb02, HUrb03, HUrb04, HUrb05
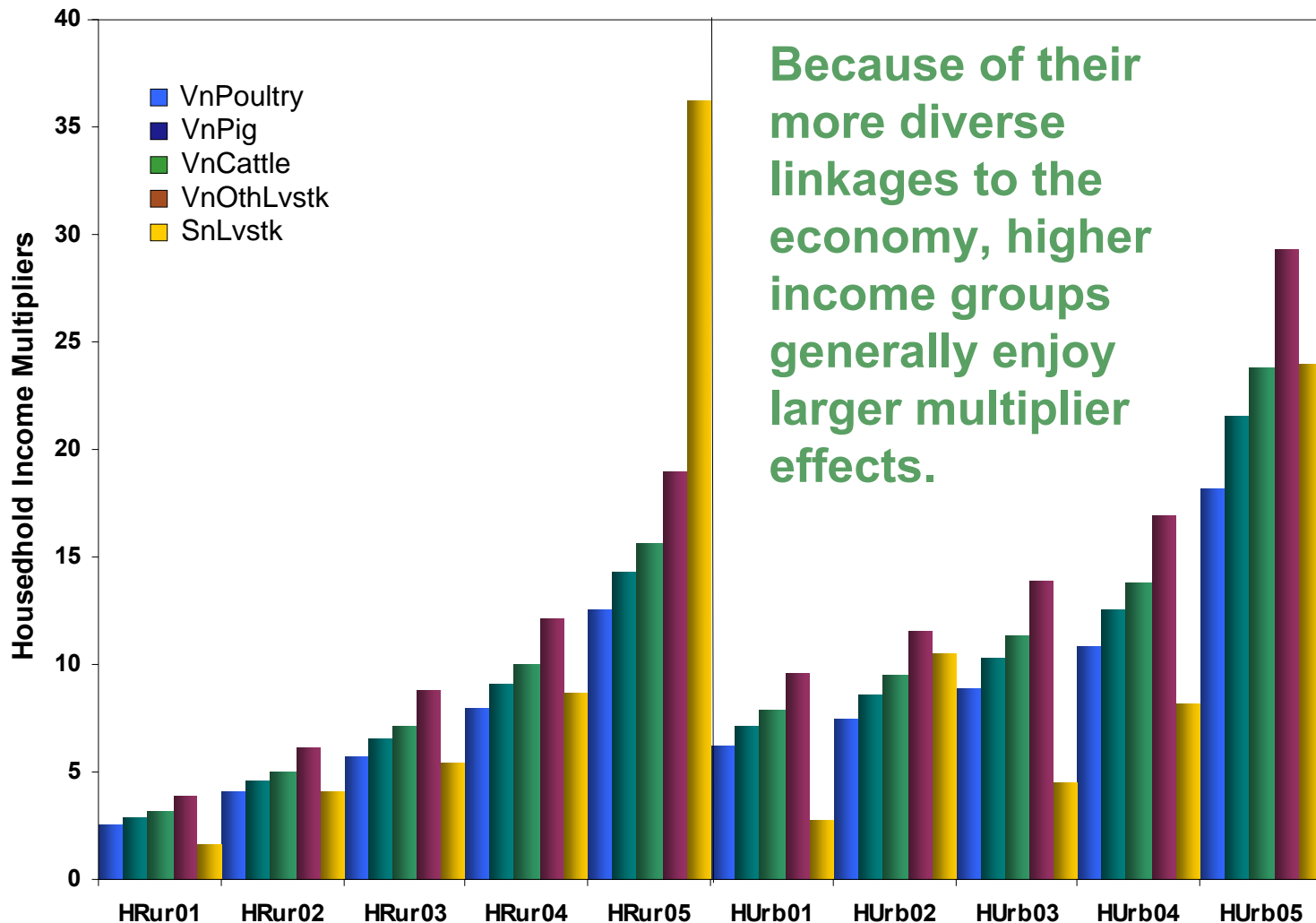
Absolute and Relative Income Effects from Livestock

More livestock income goes to higher income groups,

but livestock income is more important to Senegal's rural poor.

Relative and Absolute Income Effects

Legend: ■ Relative ■ Absolute ■ SnAbs

Categories: HRur01, HRur02, HRur03, HRur04, HRur05, HUrb01, HUrb02, HUrb03, HUrb04, HUrb05
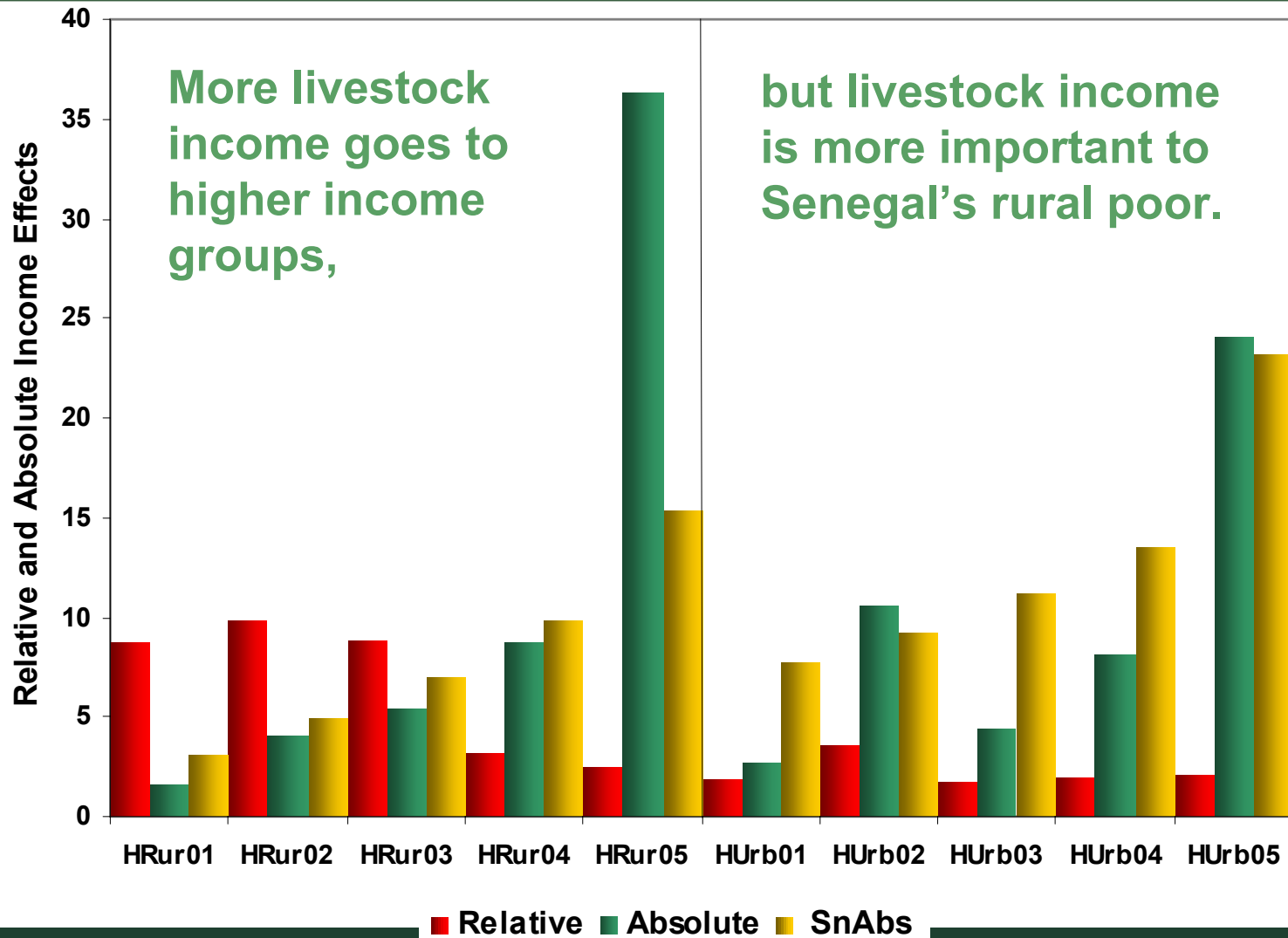
Path Decomposition (1): Rural

Target	<=Sector1	<=Sector2	<=Sector3	<=Sector4	Global	Local	Percent	Total
HRur01	Lvst				1.6	8.7	77.2	77.2
	ProcMeat	Lvst					4.1	81.3
	Mill	Lvst					3.5	84.8
	OtProcFd	ProcMeat	Lvst				1.8	86.6
	Mill	ProcMeat	Lvst				1.6	88.2
	OtProcFd	Lvst					0.8	89
	HotelRest	ProcMeat	Lvst				0.7	89.7

Target	<=Sector1	<=Sector2	<=Sector3	<=Sector4	Global	Local	Percent	Total
HRur02	Lvst				4.1	9.8	81.5	81.5
	ProcMeat	Lvst					4.7	86.2
	OtProcFd	ProcMeat	Lvst				2.8	89
	Mill	Lvst					1.6	90.6
	OtProcFd	Lvst					1.3	91.9
	HotelRest	ProcMeat	Lvst				1.1	93
	Mill	ProcMeat	Lvst				0.7	93.7

- **Individual global effects are aggregations of extended income-expenditure chains across the economy.**

Path Decomposition (2): Rural

Target	<=Sector1	<=Sector2	<=Sector3	<=Sector4	Global	Local	Percent	Total
HRur03	Lvst				5.4	8.8	76.9	76.9
	ProcMeat	Lvst					6.1	83
	HotelRest	ProcMeat	Lvst				4.8	87.8
	OtProcFd	ProcMeat	Lvst				2.4	90.2
	Mill	Lvst					2	92.2
	OtProcFd	Lvst					1.1	93.3
	HotelRest	Lvst					1	94.3
	Mill	ProcMeat	Lvst				0.9	95.2
Target	<=Sector1	<=Sector2	<=Sector3	<=Sector4	Global	Local	Percent	Total
HRur04	Lvst				8.7	3.2	81.9	81.9
	ProcMeat	Lvst					6.5	88.4
	OtProcFd	ProcMeat	Lvst				1.7	92.7
	Mill	Lvst					1.1	89.4
	HotelRest	ProcMeat	Lvst				1.1	94
	OtProcFd	Lvst					0.8	90.2
	Mill	ProcMeat	Lvst				0.5	91

- **Higher income groups generally have more <u>indirect</u> linkages to livestock income.**

Path Decomposition (3): Rural

Target	<=Sector1	<=Sector2	<=Sector3	<=Sector4	Global	Local	Percent	Total
HRur05	Lvst				36.3	2.4	1.7	1.7
	ProcMeat	Lvst					28.9	30.6
	OtProcFd	ProcMeat	Lvst				6.6	37.2
	HotelRest	ProcMeat	Lvst				6.4	43.6
	PublServ	Labor	HUrb02	ProcMeat			3.9	47.5
	PublServ	Labor	HUrb02	Lvst			3.8	51.3
	PublServ	Labor	HRur01	Lvst			3.4	54.7
	PublServ	Labor	HRur02	Lvst			3.4	58.1
	OtProcFd	Lvst					3.1	61.2
	HotelRest	Lvst					1.4	62.6
	PublServ	Lvst					1.4	64
	Mill	Lvst					1.3	65.3
	Leather	ProcMeat	Lvst				1	66.3
	Silvc	Capital	HRur03	Lvst			0.9	67.2
	FoodCr	Lvst					0.7	67.9
	Silvc	Capital	HRur02	Lvst			0.7	68.6
	Mill	ProcMeat	Lvst				0.6	69.2
	Silvc	Capital	HRur04	Lvst			0.6	69.8
	FoodCr	Capital	HRur03	Lvst			0.5	70.3
	PublServ	Labor	HUrb02	OtProcFd			0.5	70.8

- **This means they may capture a large percentage of gains, even from policies targeted elsewhere.**

Path Decomposition (4): Urban

Target	<=Sector1	<=Sector2	<=Sector3	<=Sector4	Global	Local	Percent	Total
HUrb02	Lvst				10.5	3.6	27	27
	ProcMeat	Lvst					27.1	54.1
	HotelRest	ProcMeat	Lvst				8.1	62.2
	OtProcFd	ProcMeat	Lvst				7	69.2
	OtProcFd	Lvst					3.3	72.5
	HotelRest	Lvst					1.8	74.3
	Textiles	Capital	HRur03	Lvst			0.7	75
	RealEst	Capital	HRur03	Lvst			0.7	75.7
	OilFats	CashCr	Lvst				0.5	76.2
	Leather	ProcMeat	Lvst				0.5	76.7
	Textiles	Capital	HRur02	Lvst			0.5	77.2
	RealEst	Capital	HRur02	Lvst			0.5	77.7

3.3 Policy Simulation

- Using CGE models, we can assess a wide variety of policies *ex ante*.

- Because we develop these models with consistent macro-micro datasets, we can evaluate economywide linkages and detailed incidence such as poverty alleviation.

- Here we look at two generic kinds of scenarios:
  - Policies targeted to improve livestock production
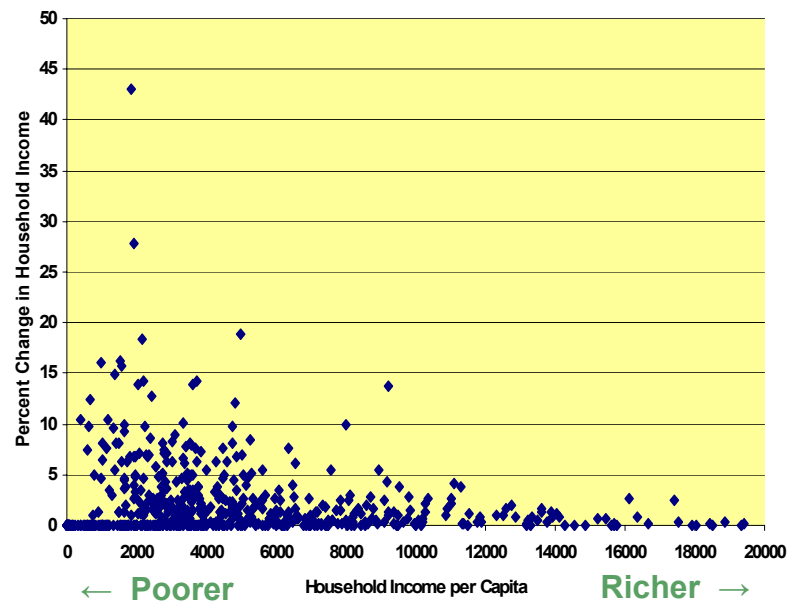 - Policies to improve market access

Vietnam: Poultry & Pig Promotion

Poultry: 7% annual productivity growth 2005-2015
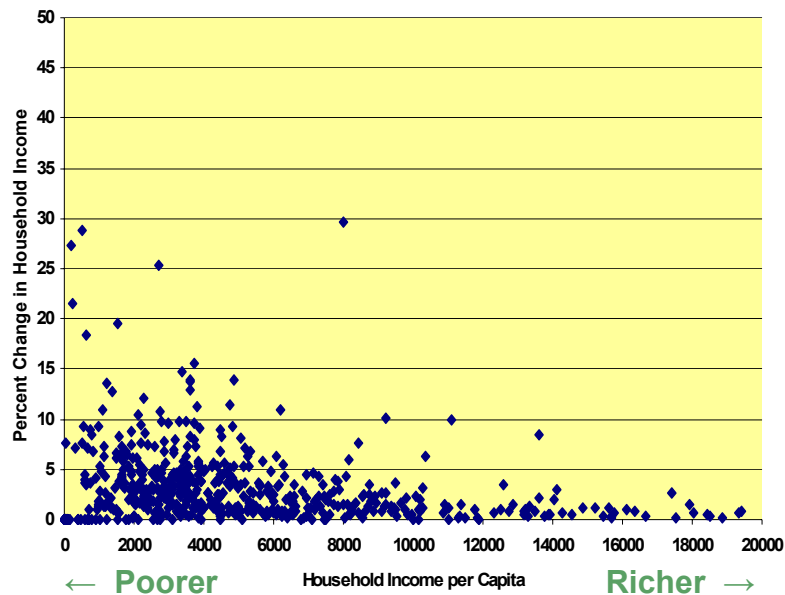
Pig: 7% annual productivity growth 2005-2015

Market Access - a Basic Policy Challenge: How to Help the Poor?

Poverty Incidence

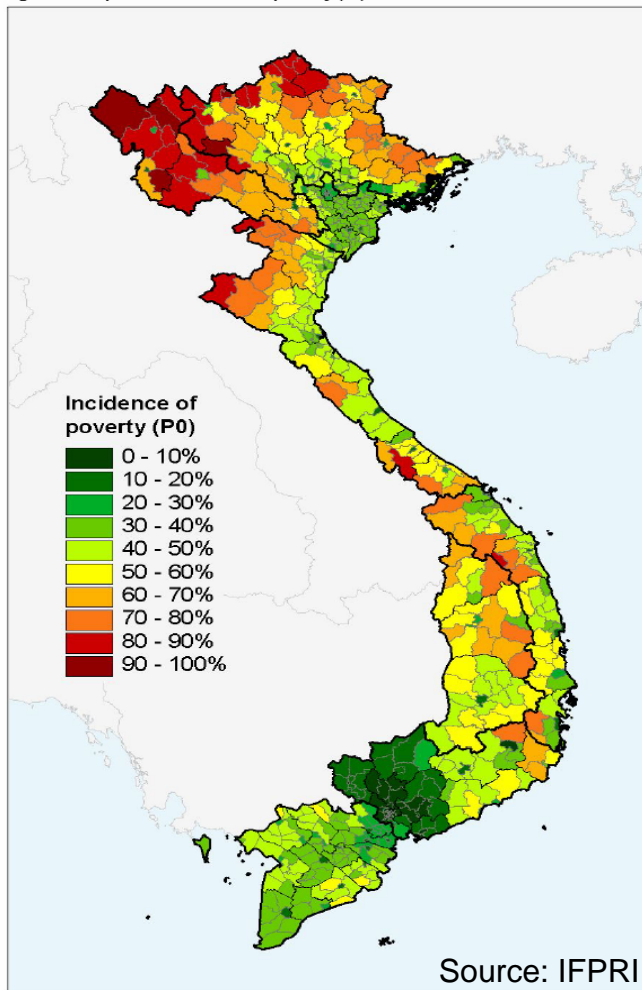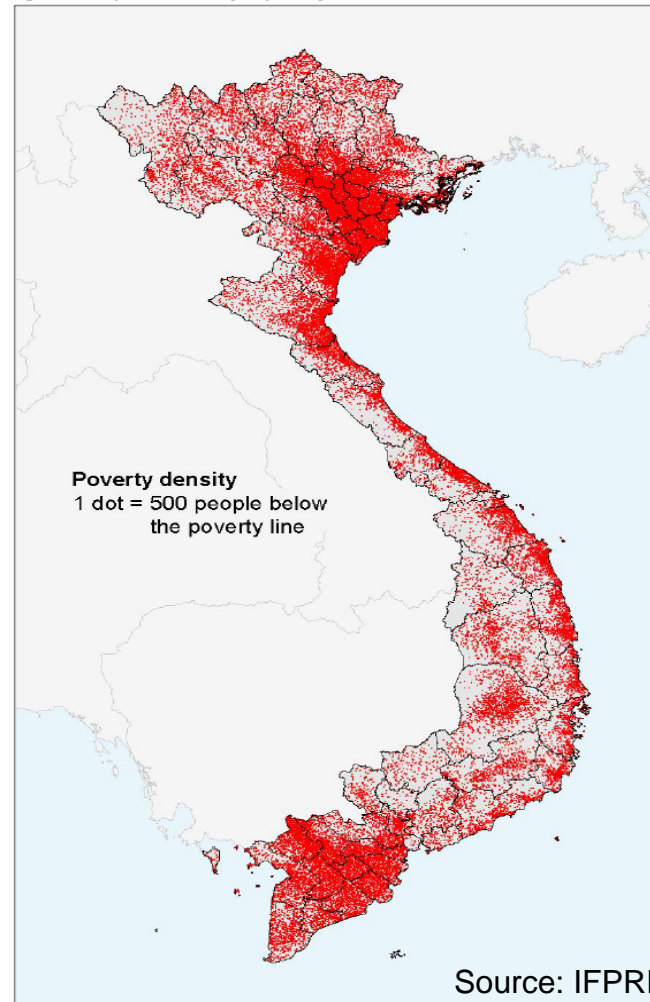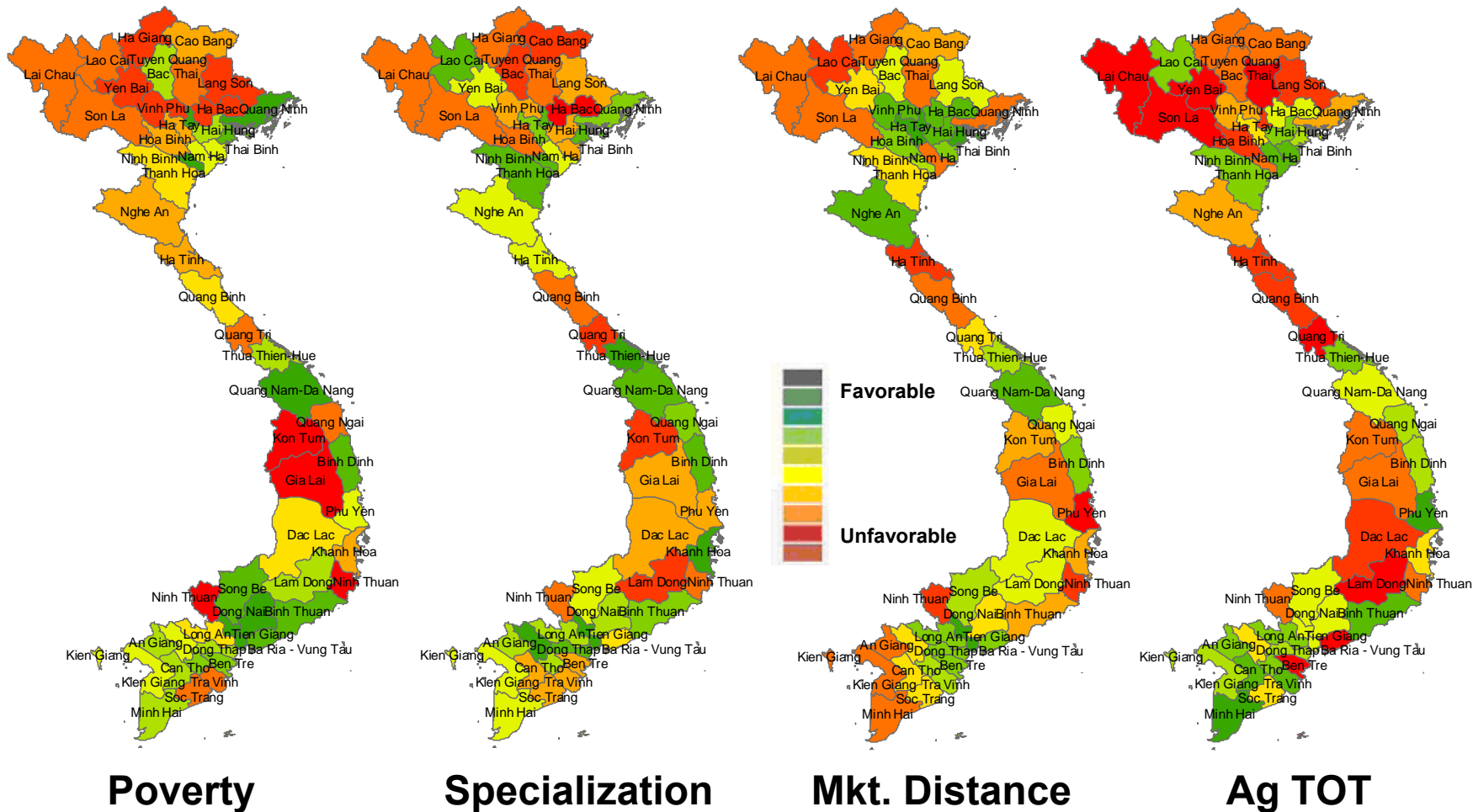Figure 3. Map of the incidence of poverty (P0) of each district

Incidence of poverty (P0)
- 0 - 10%
- 10 - 20%
- 20 - 30%
- 30 - 40%
- 40 - 50%
- 50 - 60%
- 60 - 70%
- 70 - 80%
- 80 - 90%
- 90 - 100%

Source: IFPRI

Poverty Density

Figure 9. Map of the density of poverty

Poverty density
1 dot = 500 people below the poverty line

Source: IFPRI

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Poverty and Related Variables

Poverty

Specialization

Mkt. Distance

Ag TOT

Favorable

Unfavorable

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Poverty and Market Access

Dual Policy Implications:

- Extreme poverty requires significant commitments to facilitating market access, including infrastructure investment and extension support.

- The majority of Viet Nam's poor, however, can be reached with more conventional enterprise instruments, like credit, marketing, and product supply-chain/quality support.

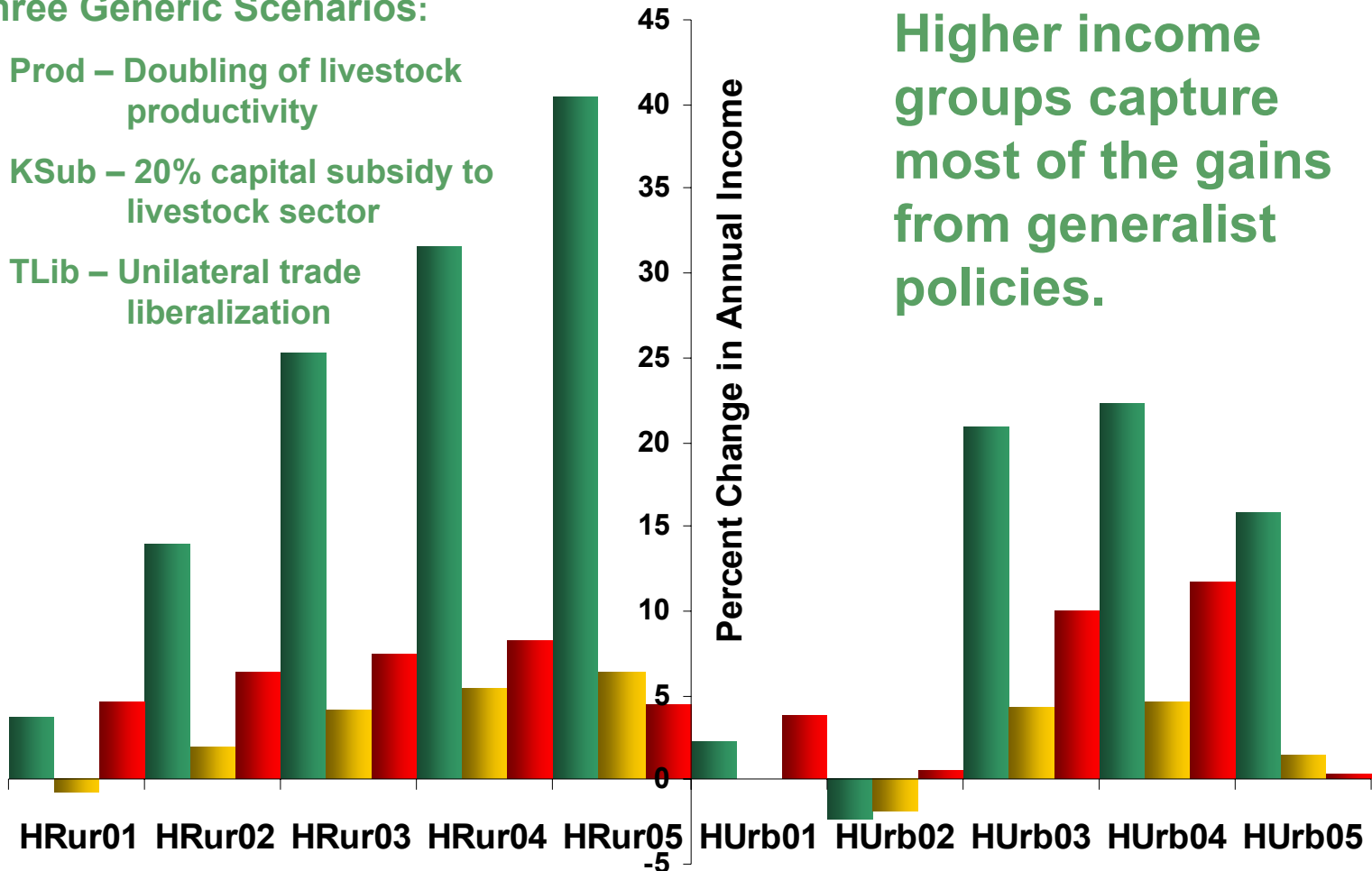# What can Trade Liberalization do for Livestock Keepers?

- Demand
  - Aggregate domestic income growth means accelerating domestic demand for meat and other animal products
  - External demand – may or may not grow, but is not likely to be a significant influence on smallholders
- Supply
  - Technology transfer
  - Capitalization from cash remittances

Scenarios for Producer Support and Trade Liberalization: Senegal

Three Generic Scenarios:

- **Prod – Doubling of livestock productivity**
- **KSub – 20% capital subsidy to livestock sector**
- **TLib – Unilateral trade liberalization**

Higher income groups capture most of the gains from generalist policies.

Percent Change in Annual Income — bar chart for scenarios HRur01–HRur05 and HUrb01–HUrb05

4. Preliminary Conclusions

- Livestock can make a substantial contribution to poverty reduction, but
- Pro-poor policies need targeting
- Livestock promotion has significant potential
  - Increase output quantity and quality
    - better market access and traceability
  - Improve distribution technology to reduce
    - margins
    - perishability (e.g. cold chains)