

Poverty and Sustainability of Recent Rural India

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Presentation Format

- Introduction/Motivation
- Poverty
 - Headcount ratio
 - Decomposing poverty change
- State of Indian Agriculture
 - Efficient, but not sustainable
 - Two dimensions of crisis: agricultural and agrarian
- Way forward: inclusive, sustainable and food secure
- Concluding Remarks

Motivation



Source: [Fundametics](#)

Number and Proportion of Poor

Year	Int Pov Line \$1.9 (2011)		Nat Pov Line (2004-05 urban PLB)	
	Poor (million)	Ratio (%)	Poor (million)	Ratio (%)
1993-94	424.2	46.1	418.8	45.3
2004-05	432.1	38.4	419.0	37.2
2009-10	378.3	31.4	361.8	29.8
2011-12	259.5	21.3	273.2	21.9

Source: [World Bank](#)

The Rural Urban Divide

Year	Poor (million)	Ratio (%)	Poor (million)	Ratio (%)
1993-94	328.6	50.1	74.5	31.8
2004-05	326.3	41.8	80.8	25.7
2009-10	278.2	33.8	76.5	20.9
2011-12	216.5	25.7	52.8	13.7

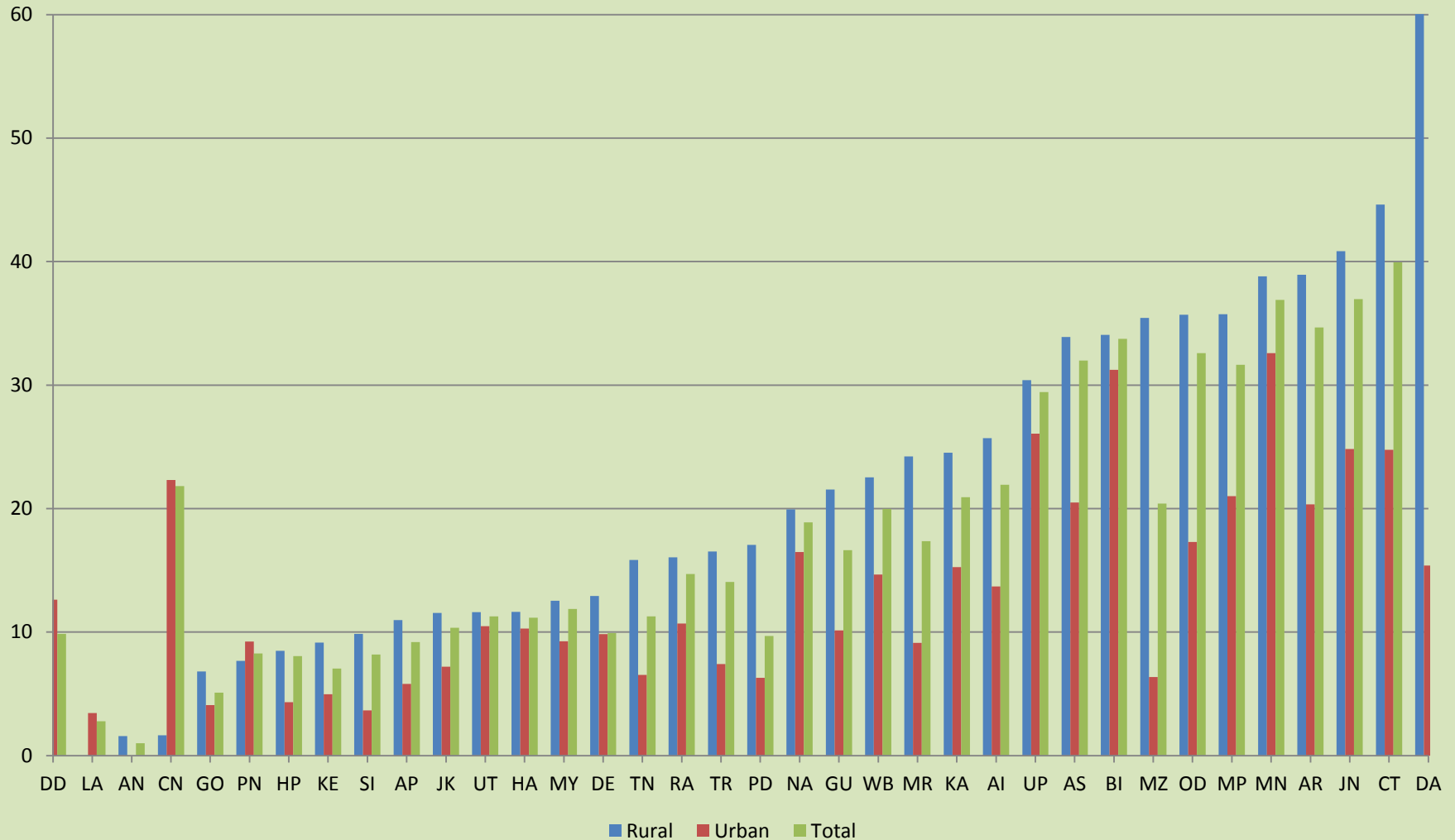
Note: The poor population (above) do not add up to that under national poverty line of previous slide, as the population assumption in the two calculations are different. However, aggregate ratio of poor will be the same

Source: Planning Commission, Government of India (Tendulkar estimates)

Poverty Estimates (up to Tendulkar)

- 1979 report: Poverty line of 1973-74 at Rs.49.09 in rural & Rs.56.64 in urban pegged at 2400 calories & 2100 calories per person per day respectively.
- Adjustments using some consumer price index helped update sector-specific poverty lines over the years.
- 1993 report: suggested updating poverty lines using sector-specific and state-specific price indices.
- 2009 report: used aggregate urban poverty estimates of 25.7% from earlier method as base and computed a commodity basket. Monetary equivalent of this basket helped compute sector-specific, state-specific and year-specific poverty lines and poverty ratios.

Poverty ratio, 2011-12



Source: Planning Commission, Government of India (Tendulkar estimates)

Basic Data: Decomposing Poverty Change

Sector	Specific Attribution	2004-05	2009-10
Rural	Poverty incidence (%)	41.93	33.77
	Total MPCE (billion INR, constant 2004-05 urban)	569.81	655.82
	Total population (million)	777.95	823.99
Urban	Poverty incidence (%)	25.49	20.80
	Total MPCE (billion INR, constant 2004-05 urban)	350.24	449.57
	Total population (million)	319.91	367.02
Comb- ined	Poverty incidence (%)	37.14	29.77
	Total MPCE (billion INR, constant 2004-05 urban)	920.05	1105.39
	Total population (million)	1097.86	1191.01

Note: Poverty incidence above does not match with previous slides (#5, #6), as the population assumption in the calculations are different.

Source: Mishra (2015a), [Decomposing Poverty Change](#), *Review of Income and Wealth*

Within-group & Between-group Decomposition

Effect	Specific Attribution	Rural	Urban	Com- bined
Within group	Growth (total MPCE)	-9.45	-4.32	-13.77
	Inequality	-0.40	0.53	0.13
	Population Change (total)	4.13	2.39	6.52
	Total within group	-5.72	-1.41	-7.13
Between group	Population Change (Share)	-0.63	0.39	-0.24
Total	Total effect	-6.35	-1.02	-7.37

Source: Mishra (2015a), [Decomposing Poverty Change](#), *Review of Income and Wealth*

Efficient, but not sustainable



Source: P Sainath, [People's Archive of Rural India](#), [Farming crisis](#).

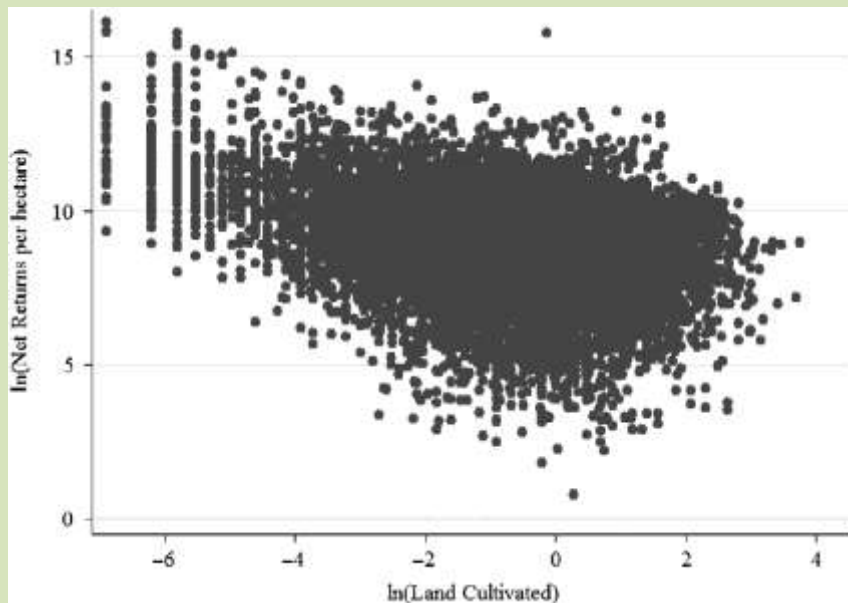
Basic Information by farm size, 2002-03

Season	Size	N	AvLnd, ha	NR/AvLnd, Rs	NR/ha, Rs	AvFmSz
Kharif	NL <0.1 ha	4146	0.05	903	16841	4.93
	MA 0.1-1ha	26661	0.47	3787	8116	5.29
	SL 1-2 ha	7648	1.40	10070	7192	5.91
	SM 2-4 ha	3846	2.70	17825	6590	6.36
	ME 4-10 ha	1643	5.65	32196	5697	6.92
	LA 10+ ha	219	14.83	53511	3609	7.86
	All	44163	1.05	7130	8530	5.53
Rabi	NL <0.1 ha	3111	0.12	1392	11209	5.05
	MA 0.1-1ha	18039	0.48	4727	9865	5.53
	SL 1-2 ha	5520	1.17	11492	9846	6.25
	SM 2-4 ha	2691	1.98	20007	10 093	6.60
	ME 4-10 ha	1152	3.87	38418	9934	7.22
	LA 10+ ha	167	8.42	72088	8557	8.54
	All	30680	0.87	8578	10013	5.79

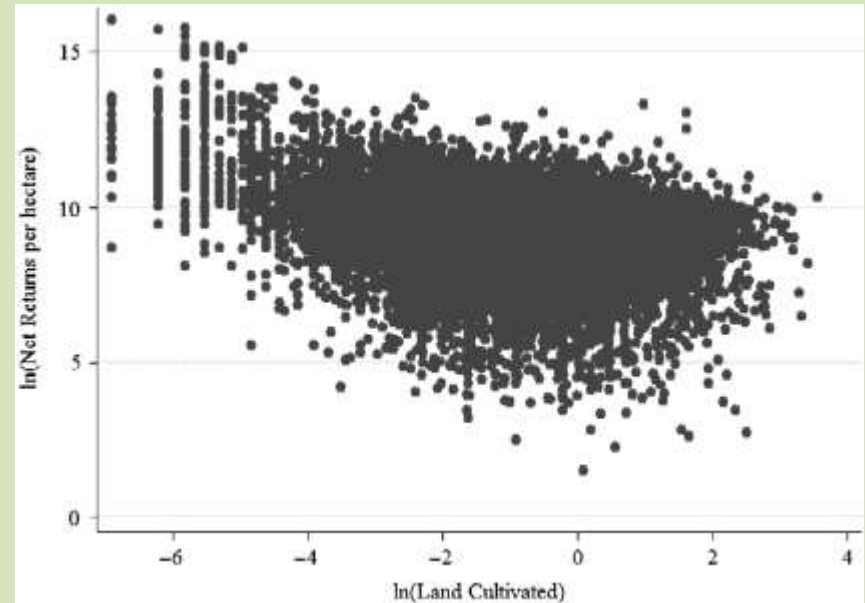
Source: Gaurav and Mishra (2015)

Scatter plots, 2002-03

Kharif 2002-03



Rabi 2002-03



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Inverse Relationship

Model	Variable	Kharif	Rabi	Combined
OLS	Land	- 2460.24 ^{***}	- 3020.06 ^{***}	- 2982.29 ^{***}
		(340.791)	(470.374)	(345.9693)
	Intercept	17 518.90 ^{***}	20 544.72	19 365.74 ^{***}
		(659.434)	(777.01)	(670.8575)
	<i>N</i>	44 163	30 661	74 847
	<i>R</i> -sq	0.001	0.001	0.001
Double-Log	LnLand	- 0.25 ^{***}	- 0.212 ^{***}	- 0.29 ^{***}
		(0.005)	(0.006)	(0.004)
	Intercept	8.77 ^{***}	8.916 ^{***}	8.69 ^{***}
		(0.007)	(0.008)	(0.005)
		37 776	28 182	65 977
		0.071	0.069	0.092

Source: Gaurav and Mishra (2015)

Inverse relationship with controls and fixed effects

	<i>Kharif</i>	<i>Rabi</i>	Combined
LnLand	– 0.299 ^{***}	– 0.424 ^{***}	– 0.352 ^{***}
Irrigation	0.007 ^{***}	0.011 ^{***}	0.01 ^{***}
Family labour	0.048 ^{***}	0.038 ^{***}	0.044 ^{***}
Age	0.001 ^{**}	0.003 ^{***}	0.002 ^{***}
Training	0.068 ^{***}	– 0.238	0.071 ^{***}
Crop insurance	0.095 ^{***}	0.135 ^{***}	0.112 ^{***}
Purchased seed	0.014	0.110 ^{***}	0.058 ^{***}
Exchanged seed	– 0.035 ^{***}	0.055 ^{***}	0.004
Group member	0.101 ^{***}	0.16 ^{***}	0.126 ^{***}
Like farming	0.11 ^{***}	0.158 ^{***}	0.13 ^{***}
Intercept	8.483 ^{***}	8.131 ^{***}	8.334 ^{***}
<i>N</i>	37 570	28 032	65 602
<i>R</i> -squared	0.32	0.36	0.34

Source: Gaurav and Mishra (2015)

Inverse relationship: further results

- Inverse relationship exists in 2002-03 to the nationally representative data
- The relationship is robust to controls for a number of household and farm characteristics and when a combined fixed effect is imposed
- Also robust to selection bias
- Unit costs are also inversely related to farm size indicating greater burden for small holders
- Efficient, but returns are not sustainable for livelihood – indicating a crisis

Two Dimensions of Crisis

- Agricultural (Developmental) Crisis

Production

Farm

Inappropriate designing of programmes and inadequate allocation of resources

[Displacement of ideology]

- Agrarian (Livelihood) Crisis

Distribution

Farmer (also agr labourer)

Threatening livelihood of all those dependent on agriculture

[Displacement of people]

Source: Mishra (2015b) and references therein

Agricultural crisis

- Agricultural GDP growth relatively lower than overall GDP
- Production of different crop groups was relatively lower between 1993-94 to 2004-05 when compared to 1981-82 to 1993-94 or 2007-08 to 2013-14
- Vulnerability and Risks increased
- Research and Extension with input-intensive
- Credit was target driven

Agrarian crisis

- In agriculture: fall in share of income has been higher than fall in share of employment (but for the last period 2009-10 to 2010-11) – tipping point (implications for labour)
- Average net returns from crop cultivation in 2012-13 is Rs.40000 per farmer household.
- In rural India: calorie, protein and fat deprivation are 62%, 34% and 29%. In urban India the deprivations are 59%, 40% and 11% respectively
- There is a farmer suicide in India every 30 minutes

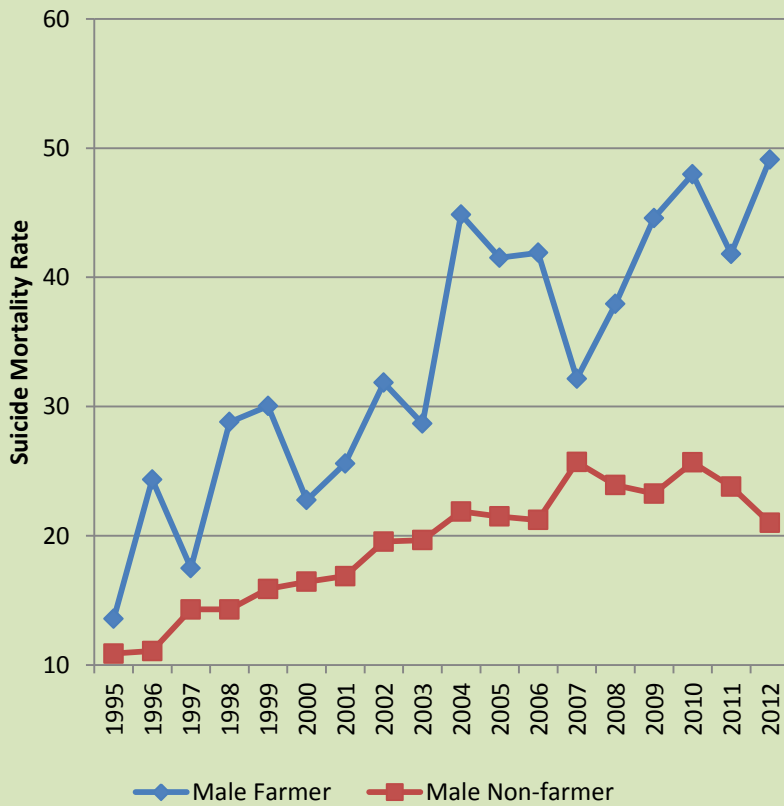
Farmers' suicides: Interrelated factors

Issues	Demand	Supply
Output, Price, Income	Yield risk: weather, power, pests, spurious inputs; Not profitable; Poor returns	Increased price volatility; subsidies in US/EU; low tariff; MSP not always functional; Futures-virtual
Input	Supplier-induce-demand; Deskilling; Increasing costs – tragedy of commons	Poor link - research and extension; unregulated private suppliers; Inadequate pub investment
Credit	Formal – not timely; repayment difficult yield/price shocks; System draws farmers into credit; Consumerism	Decline in branches; decline in agricultural/net bank credit (direct); Increasing reliance on informal sources at higher interest burden
Other	Dominance of lender/input dealer; higher family size; lack of social support	Interlinked markets; Non-farm option is limited; Pub health response (farmers); Pesticide availability

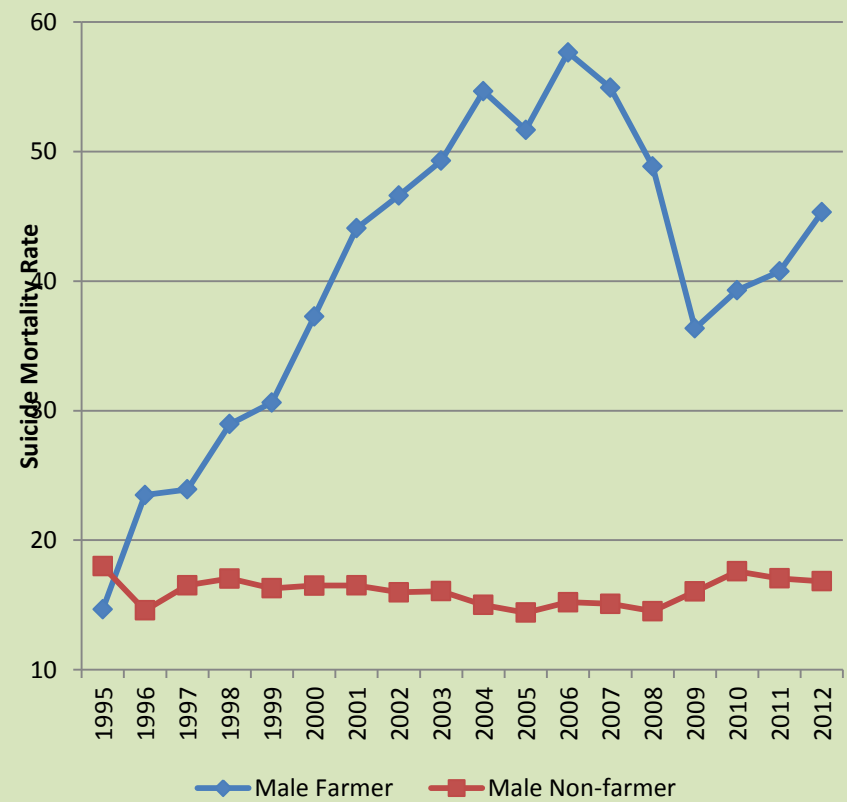
Source: Mishra (2008)

SMR for AP & Maharashtra

Andhra Pradesh 1995-2012



Maharashtra 1995-2012



Source: Mishra (2014)

Inclusive, sustainable and food secure agriculture

Transfer of Technology

- Input-intensive
- Single product
- Mono-cropping
- Production/Yield
- Private property
- Subsidies

Knowledge-centric

- Input-output are inter-dependant
- Complex system: diverse, location-specific
- Mixed & multiple produce
- Production & risk reduction, marginal lands
- Commons are important
- Space for community participation

TINA

MAE

Source: Mishra, Ravindra and Hesse (2013)

Risk Mitigation

Scenario	Year	Input	Output	Net Retu	Cons	CumSav
Tradi- tional	1	1.0	3.0	2.0	1.3	0.7
	2	1.0	3.0	2.0	1.3	1.4
	3	1.0	3.0	2.0	1.3	2.1
	4	1.0	0.0	-1.0	1.1	0.0
Input Intensive	1	3.0	6.0	3.0	1.8	1.2
	2	3.0	6.0	3.0	1.8	2.4
	3	3.0	6.0	3.0	1.8	3.6
	4	3.0	0.0	-3.0	0.6	0.0
Sustain- able	1	1.5	4.5	3.0	1.5	1.5
	2	1.5	4.5	3.0	1.5	3.0
	3	1.5	4.5	3.0	1.5	4.5
	4	1.5	0.0	-1.5	1.2	1.8

Source: Mishra (2015b)

MAE vs TINA

Multiple Alternatives Exist (MAE)	There is No Alternative (TINA)
Bottom-up (provider of knowledge work in tandem with user)	Top-down (provider of technology is superior to user)
Context-specific – requires an understanding of system dynamics	Crop-specific – involves inputs/technology application to enhance production
Emphasis on risk reduction	Emphasis on efficiency (output/unit input)
Extensive involves marginal land spread over larger areas	Input-intensive in areas with better soils and with access to water through irrigation
Integration of mixed and multiple crops with livestock	Specialization that espouses mono-cropping
Production is dependent on commons	Production in owner-operated lands

Source: Mishra, Ravindra and Hesse (2013)

Concluding Remarks

- Political economy of poverty measurement
- Crisis in Indian Agriculture
 - Efficient, but not sustainable
 - Agricultural crisis: Low growth, increasing vulnerability, delinked R&E, concerns of credit
 - Agrarian crisis: Declining share of pie, low farm income, food insecurity, farmers' suicides
- Way out
 - Inclusive, sustainable and food secure
 - Integrated farming, revival of millets

Some recent related work

- Srijit Mishra, [Decomposing Poverty Change: Deciphering Change in Total Population and Beyond](#), *Review of Income and Wealth*, 2015a; 61 (4): 799-811.
- Sarthak Gaurav and Srijit Mishra, [Farm size and Returns to Cultivation in India: Revisiting an Old Debate](#), *Oxford Development Studies*, 2015; 43 (2): 165-193.
- Durgesh C Pathak and Srijit Mishra (2015) [Poverty Estimates in India: Old and New Methods, 2004-05](#), *Poverty & Public Policy*, 7 (1): 44-63. see [journal link](#).
- Srijit Mishra, [Nature, Extent, Causes and Issues in Agricultural Distress](#), Foundation Day Seminar, NABARD, 2015b.
- Srijit Mishra, [Farmers' Suicides in India, 1995-2012: Measurement and Interpretation](#), LSE ARC Working Paper No.63, 2014
- Srijit Mishra, A Ravindra and Ced Hesse, [Rainfed agriculture: for an inclusive, sustainable and food secure India](#), IIED Policy Brief 10041IIED, 2013.
- D Narasimha Reddy and Srijit Mishra (editors), [Agrarian Crisis in India](#), Oxford University Press, New Delhi, 2009.
- Srijit Mishra, [Risks, Farmers' Suicides and Agrarian Crisis in India: Is There a Way Out?](#) *Indian Journal of Agricultural Economics*, 2008; 63 (1), 38-54.
- Sarthak Gaurav and Srijit Mishra, [Land Ownership and Tenancy in Odisha](#), in Pulin B. Nayak, Santosh C. Panda and Prasanta K. Pattanaik (eds.) [The Economy of Odisha: A Profile](#), Oxford University Press, New Delhi, 2016; 54-86.

Comments and Questions

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