

# Living on the Edge: Protecting the Poor (or not?) from Natural Shocks

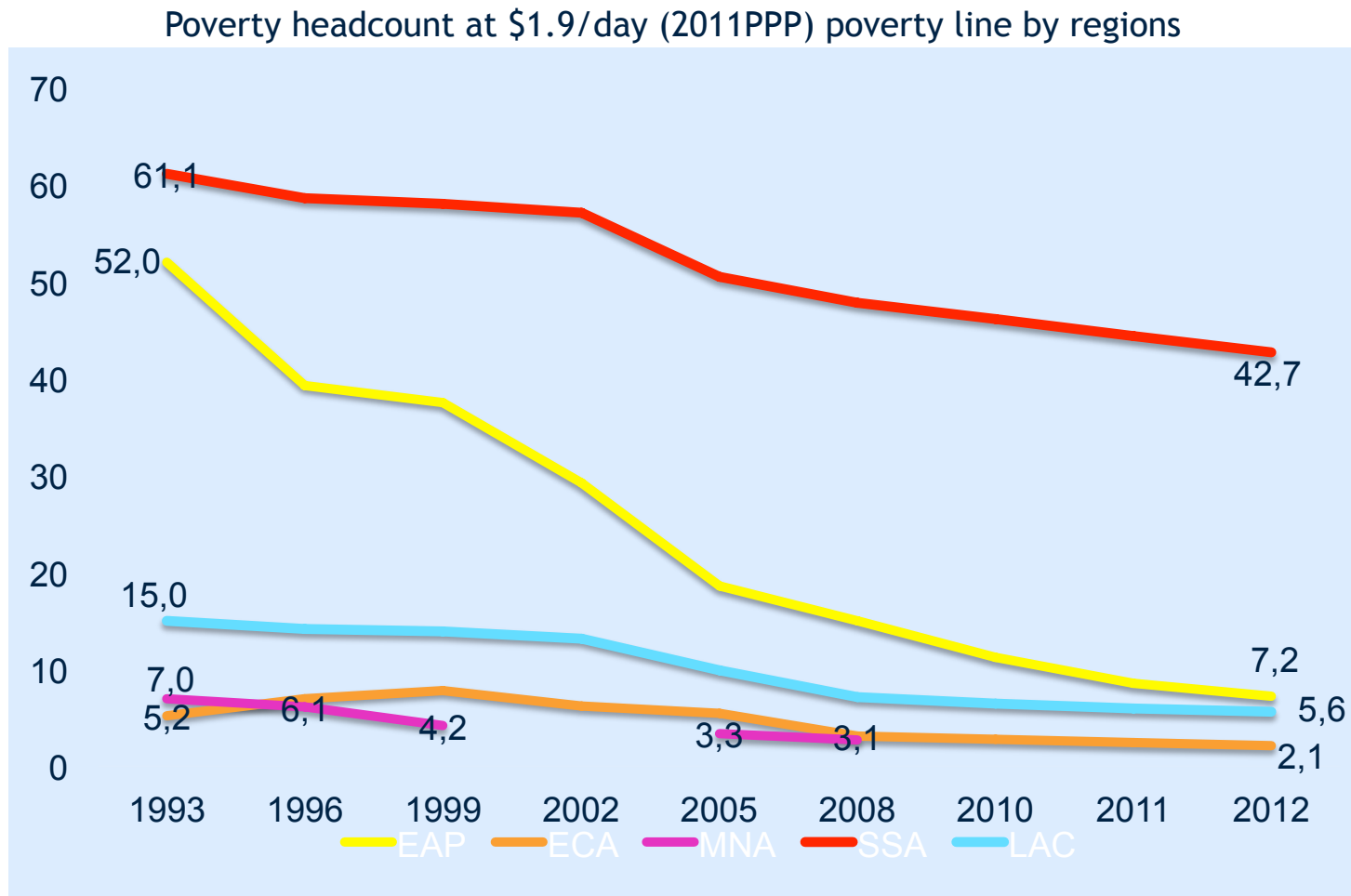


**WORLD BANK GROUP**  
Poverty

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# Two clear trends: 1) a remarkable decline in global poverty ...

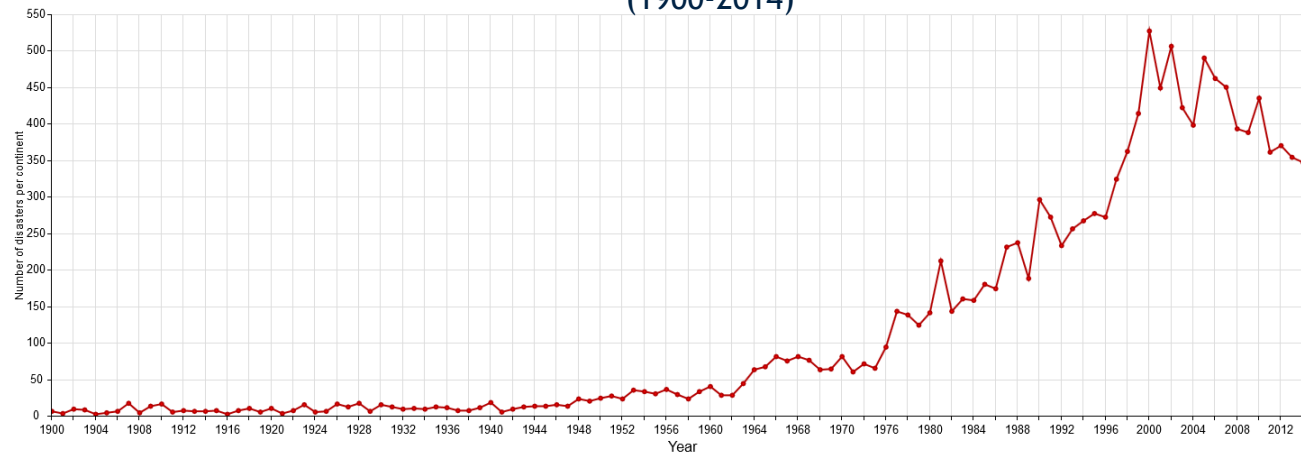


Source: World Bank

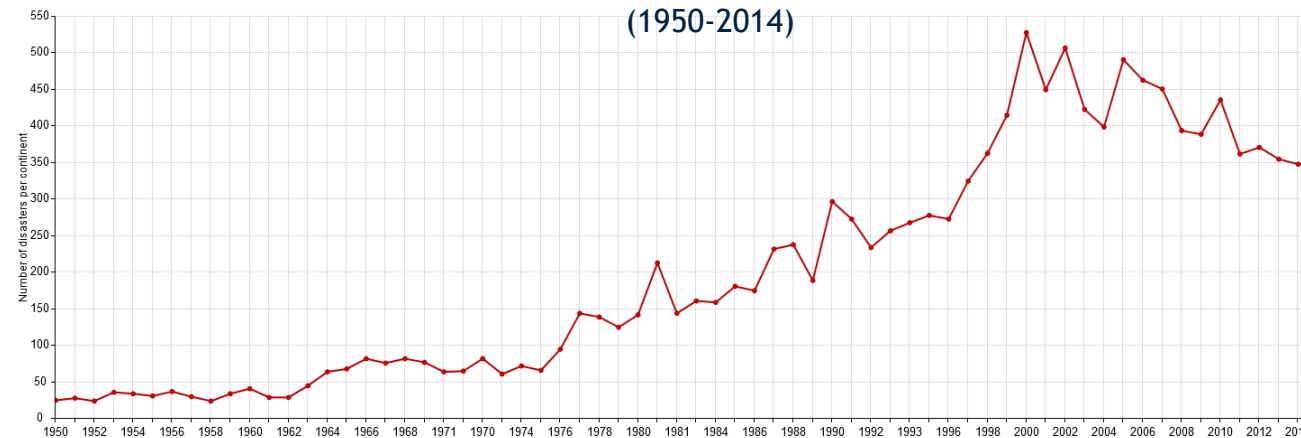
## 2) along with a sharp increase in the incidence of natural disasters

Number of natural disasters

(1900-2014)



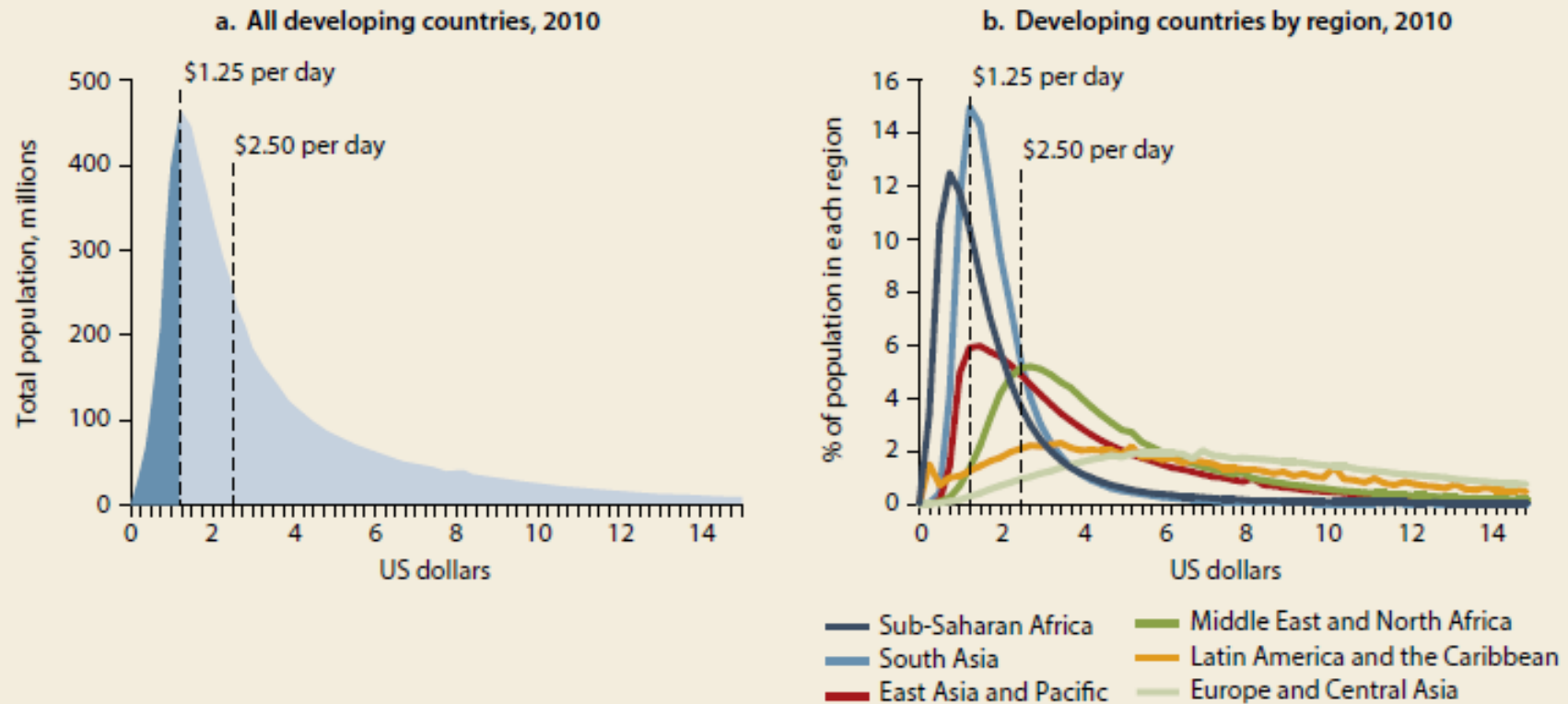
(1950-2014)



Source: EM-DAT

# But still many people are a disaster away from poverty

More than 20 percent of the population in developing countries live on less than \$1.25 a day, more than 50 percent on less than \$2.50, and nearly 75 percent on less than \$4.00.



*Note:* \$1.25 per day is a widely used measure of extreme poverty. However, \$2.50 per day is considered a more relevant measure of extreme poverty for some regions, such as Latin America and the Caribbean.

Source: WDR 2014

# Vulnerable people often dealing with a very risky environment

*Percentage of respondents reporting type of shock*

Shocks	Afghanistan <sup>a</sup>		India <sup>b</sup>	Lao PDR		Malawi		Peru		Uganda	
	Urban	Rural	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
One or more	16.4	48.9	61.6	34.4	72.1	40.0	66.8	20.7	34.4	29.7	56.2
Two or more	8.7	39.2	23.4	11.9	36.1	12.7	40.4	1.4	1.9	5.6	15.6
Natural disasters (drought, flood)	10.6	42.2	57.3	5.6	36.0	10.4	47.2	2.6	21.5	19.9	52.1
Price shocks <sup>c</sup>	0.2	3.0	—	4.4	4.9	21.1	42.0	—	—	1.7	3.2
Employment shocks	6.4	4.3	—	9.3	3.1	7.7	3.4	6.4	1.5	1.9	0.7
Health shocks (death, illness)	6.9	14.0	30.2	23.2	33.8	10.1	18.0	9.1	8.9	11.8	14.9
Personal and property crime	1.8	6.6	0.9	5.8	1.9	8.5	8.4	3.2	3.1	6.6	8.7
Family and legal disputes	—	—	1.9	0.0	0.9	1.7	4.3	0.7	0.3	—	—

*Note:* — = not available.

*Source:* WDR 2014 team based on data from household surveys, various years 2005-11.

# The observable damaging effects of natural shocks are rather obvious – especially if not managed well

Google Earth images of a neighborhood just off of Canape Verte before and after the earthquake

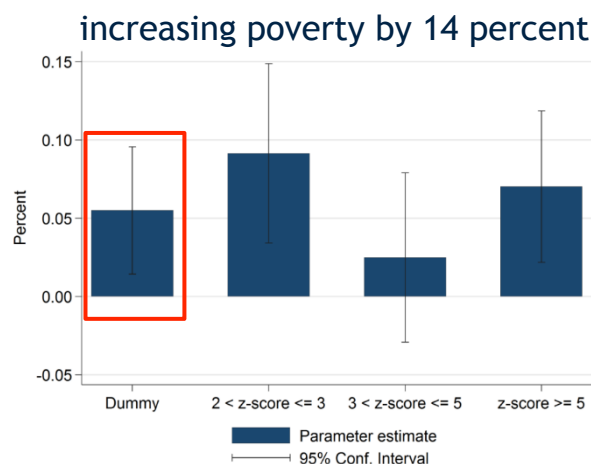
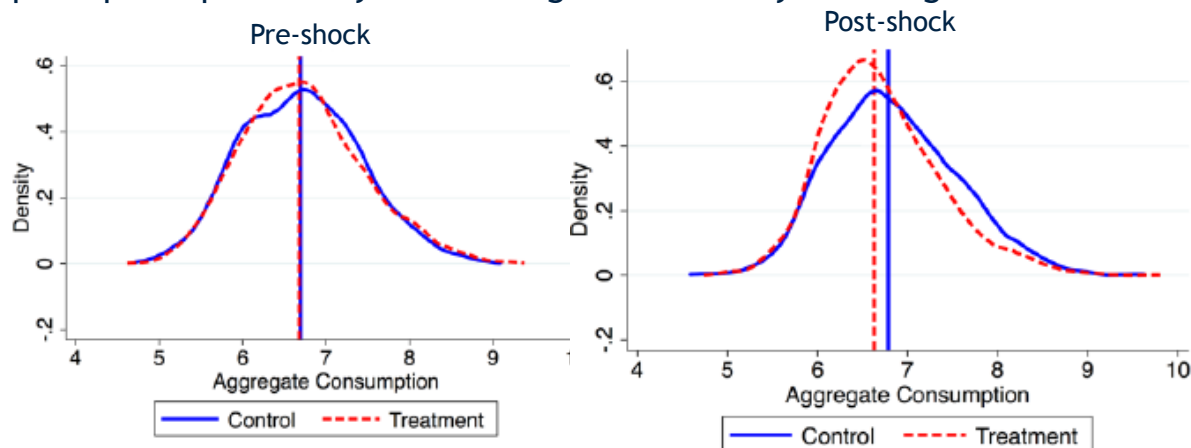


- The 7.0 magnitude earthquake in Haiti in 2010 killed around 220,00 people, injured 300,000 and affected 3,500,000
- The 8.8 magnitude earthquake that hit Chile (also) in 2010 killed 550 people



And are confirmed by a large (and growing) body of empirical evidence – household well-being is largely susceptible in the short-term ...

Consumption per capita fell by 5.5% among households by Storm Agatha in Guatemala in 2010 ...



# and also in the long-term

Well-being of adult Indonesian women sensitive to environmental conditions early in life

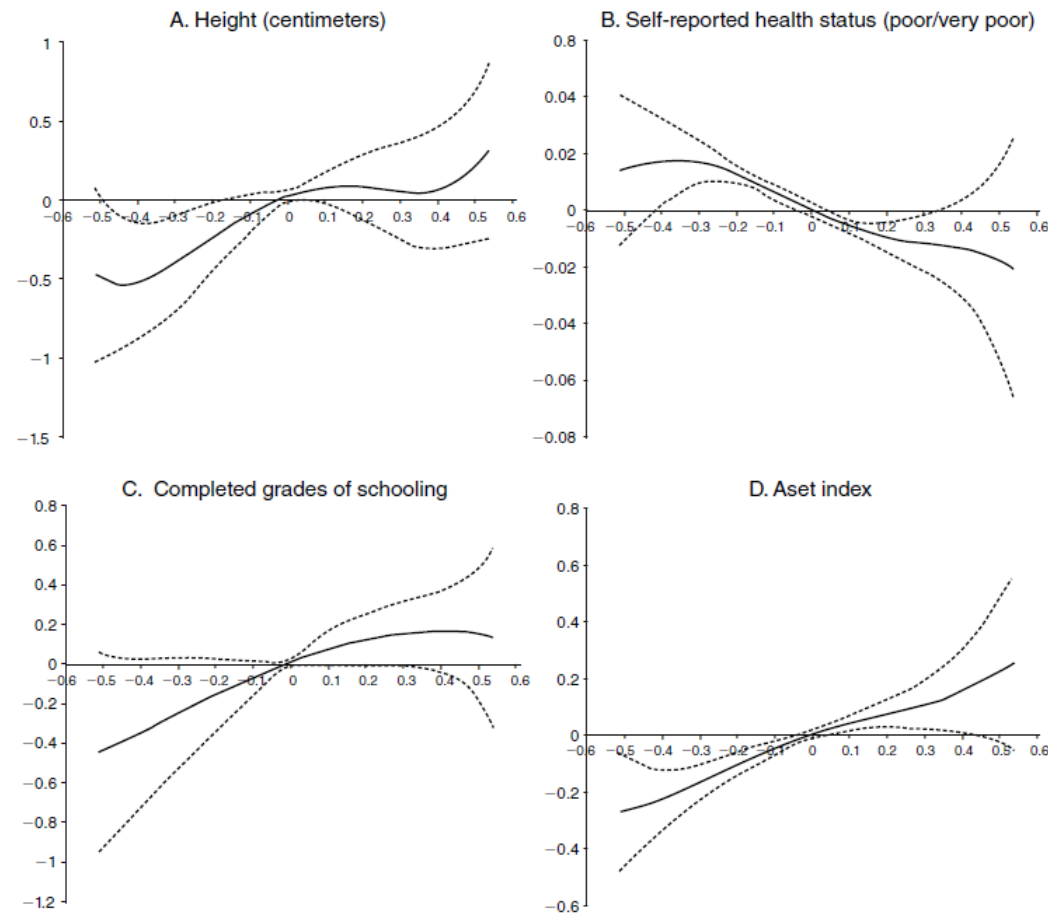


FIGURE 1. ADULT OUTCOMES ON RAINFALL IN BIRTH DISTRICT AND BIRTH YEAR

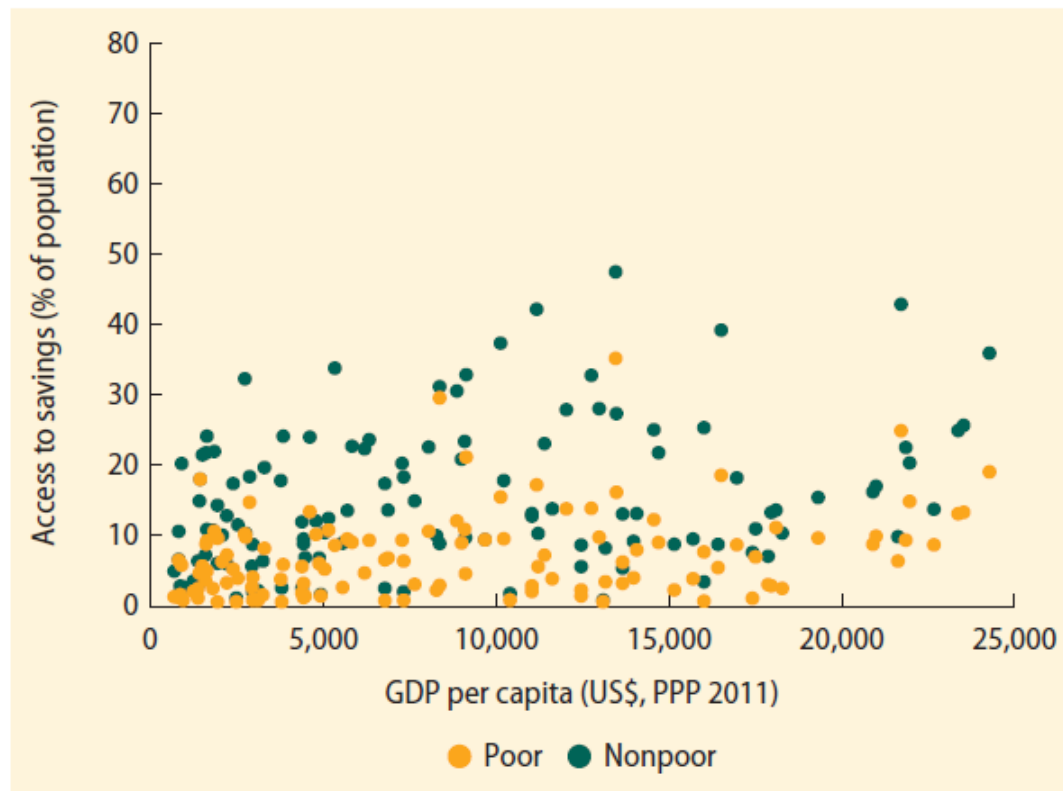
*Notes:* Nonparametric Fan regressions (biweight kernel, bandwidth = 0.5), conditional on birth district–season fixed effects, birth year–season fixed effects, and birth district–season-specific linear time trends. Solid line is nonparametric regression estimate. Dashed lines bound 95 percent bootstrapped confidence intervals.

Source: Maccini and Yang (2009)



# How can financial/insurance instruments help when, for instance, unpredictable rainfall is an important risk for agricultural activity?

Poorer people lack sufficient access to financial instruments  
*(Fraction of poor and nonpoor people with savings at a financial institution)*



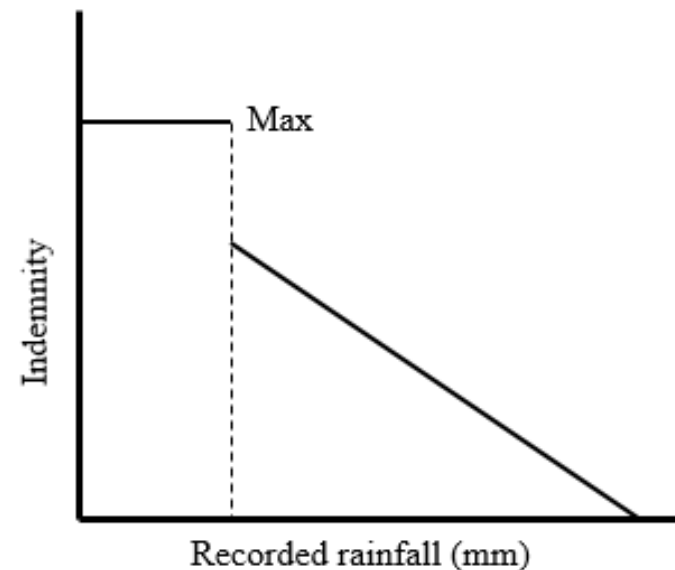
Note: Each dot represents poor people or nonpoor people in one country.

PPP = purchasing power parity.

Source: FINDEX, taken from “Shock Waves”, World Bank (2016)

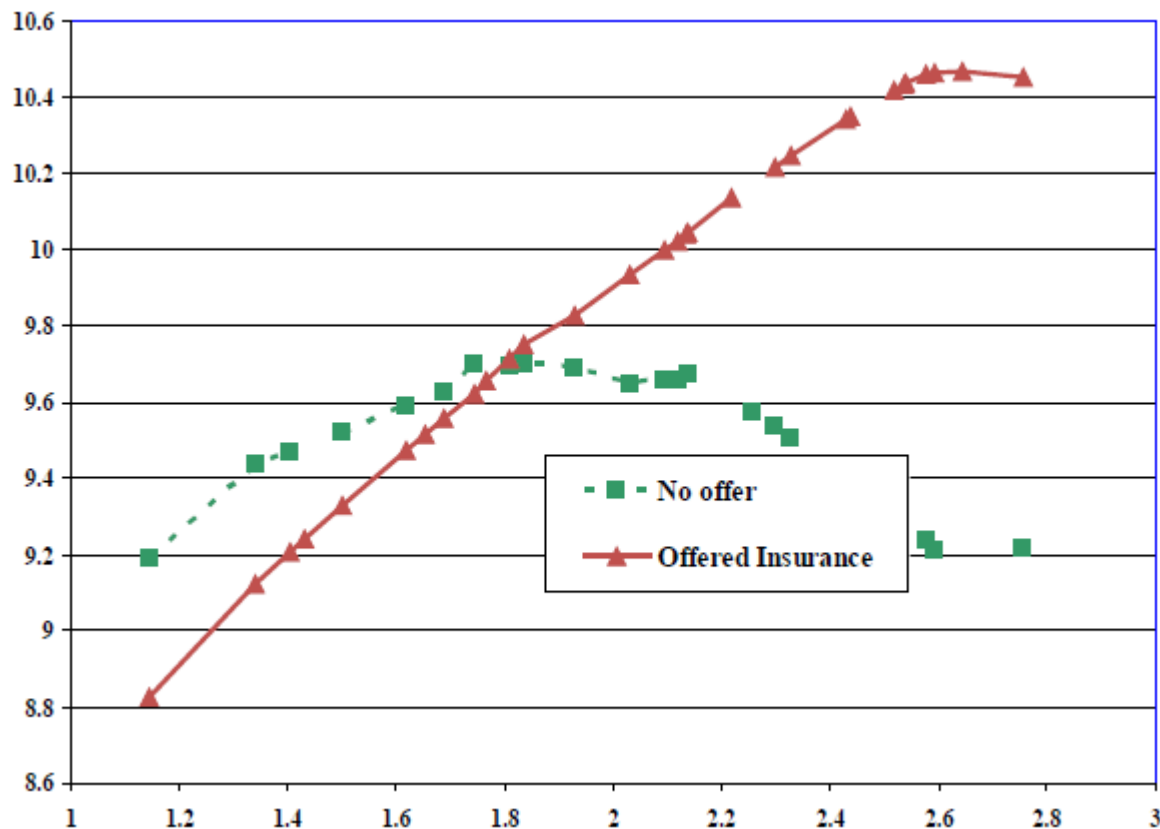
# Insure the uninsured, e.g. rainfall index-insurance products

- Payouts determined on the basis of an observable variable (i.e. rainfall)
- Avoids traditional problems (moral hazard, adverse selection)
- High frequency rainfall data available in many agricultural contexts
- ‘Basis Risk’ (i.e. partial insurance)
- Low take up at market prices so many argue that it makes sense to subsidize it



# But if poverty reduction is an objective, be aware of the unintended consequences

The agricultural system becomes more sensitive to rainfall for insured farmers

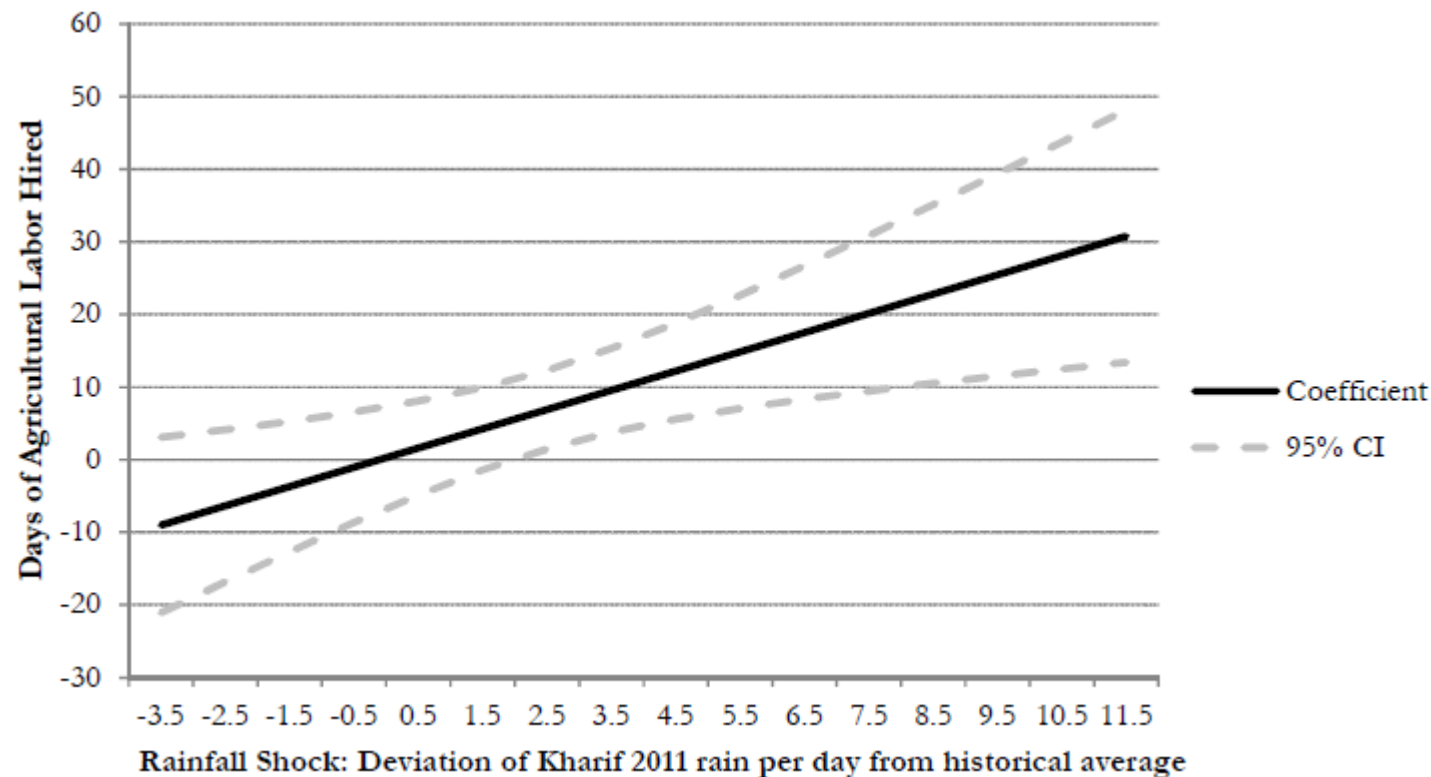


Note: Lowess-Smoothed Relationship Between Log Per-Acre Output Value and Log Rain per Day in the Kharif Season, by Insurance Treatment

Source: Mobarak and Rosenzweig (2014)

# Current design of index insurance products could make the poorest of the poor worse off

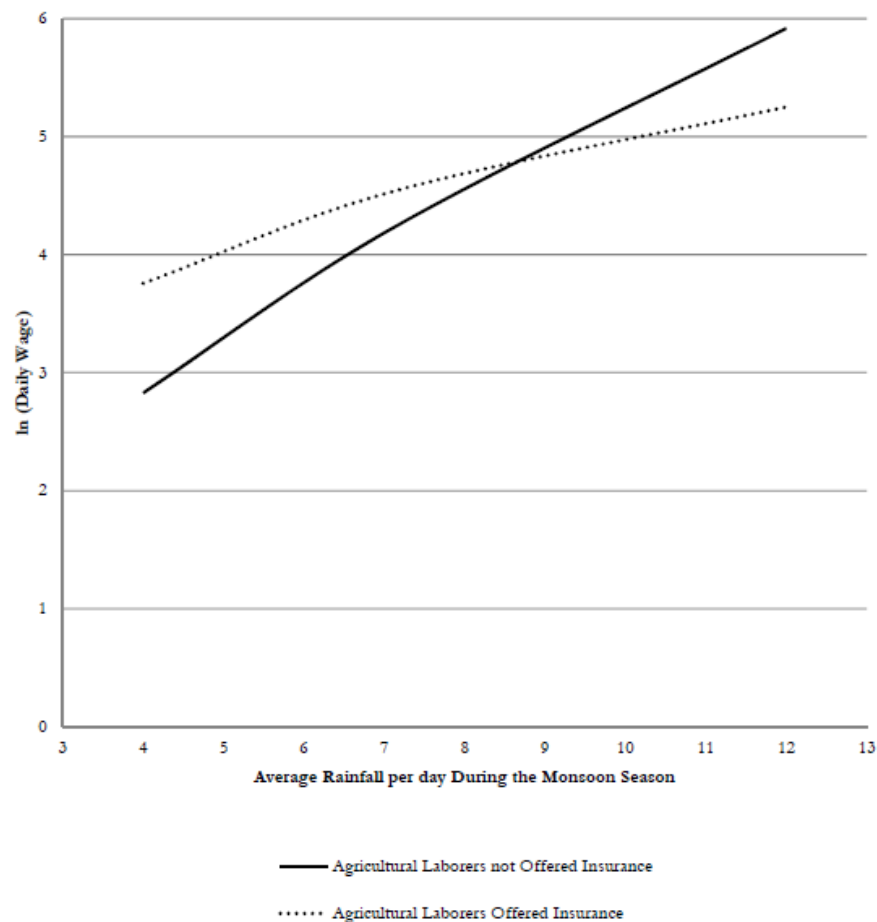
Labor demand by insured cultivators is lower (relative to the uninsured) for negative rainfall shocks



Source: Mobarak and Rosenzweig (2014)

# Take away: The design of financial protection against shocks matters a lot for poverty reduction!

Marketing insurance to landless laborers reduces the sensitivity of wages to rainfall



Source: Mobarak and Rosenzweig (2014)

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