

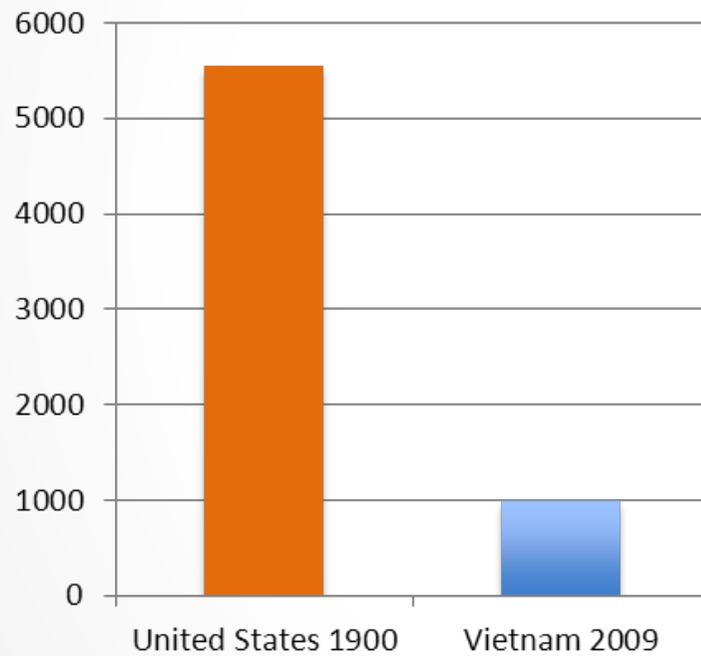
Nobel Symposium on Growth and Development

Health

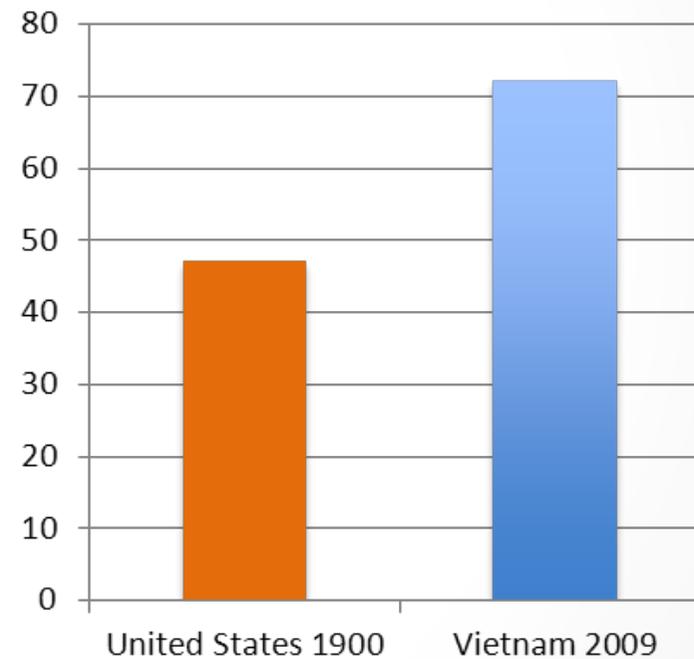
2012

Michael Kremer

Income per Capita (2005 dollars)



Life Expectancy



Overview

1. Impact of health
2. Determinants of health investment
3. Health care provision

Areas for future work

Methodological developments

Economic and Social Impact

- Gallup and Sachs (2001) argue large growth effects
- Nutrition poverty trap?
(Das Gupta and Ray, 1986)
 - Nutritional poverty traps require $E_{N,I} * E_{I,N} > 1$ at some point
 - Deaton and Subramanian (1996)
 - Jensen and Miller (2008)
- Behavioral poverty traps?

Longer-run Health Traps?

- Impact of income on child health
 - Maccini & Yang (2009) – rainfall, Indonesia
 - Banerjee et al. (2010) – wine disease, 19th century France
 - Amarante et al. (2012) – government redistribution, Uruguay
- Long-run impact of child health
 - Field et al. (2009) – iodine supplements, Tanzania
 - Maluccio et al. (2009) – nutritional supplements, Guatemala
 - Bleakley (2010), Lucas (2010), Cutler et al. (2010) – malaria
 - Bleakley (2009) – deworming, US South

Education Impact (and Multiplier)?

- Bleakley (2010) – impact of health on education depends on relative productivity impact
- Pitt, Rosenzweig and Hassan (2011) – gender and occupational sorting
- Lleras-Muney and Jayachandran (2009) – lifespan and incentives for educational investment

GDP Impact

- Aggregating micro estimates:
 - Weil (2007)
- GE effects?
 - Acemoglu and Johnson (2007) find Malthusian effect
 - Some caveats
 - Specification: Aghion et al. (2009)
 - Morbidity vs. mortality (Bleakley, 2010)
 - Malthusian effects may be less relevant now
- Fertility role in growth theory, empirics (Barro, today)

Welfare Impact

- Jones & Klenow (2011): 1980-2000 income growth – 1.8%; welfare growth – 2.54%
- Becker et al. (2005) - 1965-1995 convergence in welfare

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Grossman Model

Health as Human Capital

- Consumers invest if expected private benefit exceeds costs
- Evidence that health behavior responds to benefits:
 - Jensen (2010) - providing assistance in obtaining call center jobs increases health and education investment for girls.

Market Failures

- Wedges between private and social benefit generate market failure
- Standard public finance analysis suggests optimal subsidy depends on:
 - Externality, public good benefit
 - Deadweight loss of taxation
 - Response of take-up to price : $f(x)/(1-F(x))$
- Implementation issues: government failures

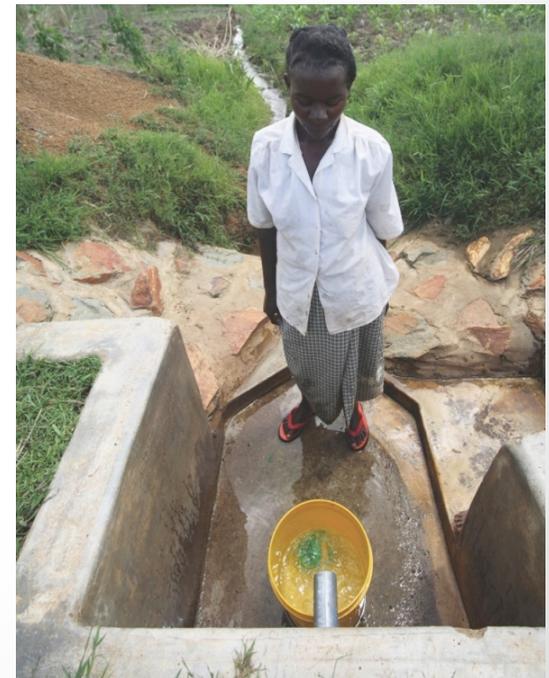
Example: Deworming in Kenya

- Disease externalities on neighboring schools, untreated in school (Miguel and Kremer, 2004)
 - Disease prevalence
 - School attendance
- Price response (Kremer and Miguel, 2007)
 - 75% take-up when free, 18% with small user fee
 - No difference in take-up with family size despite per family fee structure
 - Sicker students not more likely to pay for drugs
- Deadweight loss
 - Long-run increase in labor supply suggests negative social cost of funds (Baird et al., 2012)
 - NPV of extra taxes > cost of program

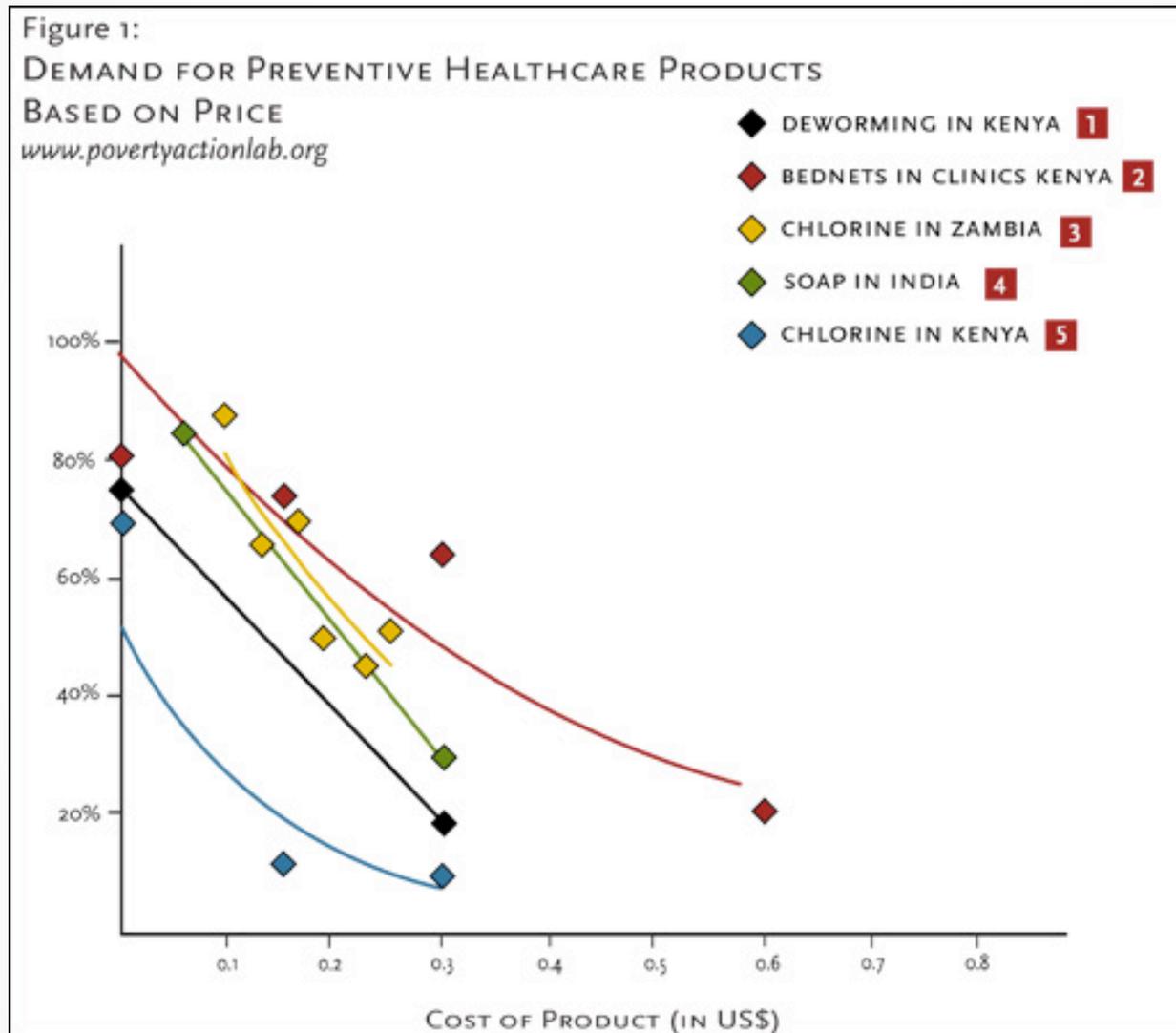


Public Goods: Spring Protection (Kremer et al. 2011)

- \$1K capital cost, negligible marginal cost
- Randomized trial suggests 25% reduction in diarrhea, switching to protected springs
- Structural model to estimate social planner allocation, private property, current free access norm
 - Estimate consumer valuation using travel cost model
 - Solve for equilibrium pricing, investment by landowners competing with each other
- Estimate that full private property would create large static losses, little dynamic benefit
- This might be different at higher income levels



Impact of Price: Prevention



Impact of Other Costs and Benefits

- Similar results for distance/convenience
- Little effect of medical need, number of beneficiaries

Does Paying Makes People More Likely to Use Health Goods?

- Widely believed by practitioners
- Could arise due to sunk cost fallacy
- No evidence
 - Cohen and Dupas (2010)
 - Hoffman (2008)
 - Ashraf, Berry and Shapiro (2010)
 - Those more likely to use are more willing to pay



Negative Prices

- Large negative prices in conditional cash transfer programs increase uptake of health and education
 - Gertler and Boyce (2001); Gertler (2004); Schultz (2004)
- Small incentives also have remarkable impact
 - Thornton (2008) – HIV test results (Malawi)
 - Banerjee et al. (2010) – immunization in rural India
 - Baird et al. (2011) – conditional transfer *amount* does not affect outcomes
 - Implications for CCT design? For human capital model?
- Education subsidy and income can affect reproductive health, fertility
 - Dupas et al. (2012)
 - Baird et al. (2011)

Information

- Often, little impact of health education
 - E.g. – worms
- But in some cases, dramatic impacts
 - Dupas (2011) – information on HIV prevalence by age
- Some puzzles for Bayesian model
 - Fade out of education campaign effect
 - Benneer et al. (2011) – greater responsiveness to coarse information
 - Non-reaction to info that don't have malaria (Dupas, 2012), water is clean

Acute Treatment and Insurance

- Substantial expenditure on health treatment of doubtful utility (Das and Hammer, 2005; Banerjee et al., 2004)
- Consumers bear substantial health risk - e.g. Gertler & Gruber (2002)
- Low take-up of voluntary health insurance - e.g. Thornton et al. (2010)
- Limited and mixed evidence on effect of price of clinic visits on take-up, health
 - Dow et al. (2003) - exogenous increase in fees at clinics in Indonesia
 - Cohen and Dupas (2011) - subsidized anti-malaria in Kenya
 - King et al. (2009) – Mexican Seguro Popular health insurance program had no effect on healthcare utilization in short term

Enriching the Model

- Household bargaining
 - Thomas (1990) – Source of income affects expenditure
 - Duflo (2003)
 - Ashraf, Field and Lee (2010) - Providing women information on contraception without spouse increases use of concealable contraception, reduced undesired fertility
- Liquidity constraints
 - Dupas (2009) – Mosquito nets
- Present bias
 - Sensitivity of take up to small short-run costs and benefits, convenience
 - Apparent underinvestment in prevention vs. treatment
 - Limited response to magnitude of future benefits
- Decision costs, optimization failures

Applying the Lessons: Program Design and Testing

- Water infrastructure often expensive, recontamination frequent
- Chlorination safe, effective, low-cost, but single-digit take-up under social marketing
- Design for free distribution, convenience, habit formation, norm formation

Chlorine Dispenser System

- Majority of households test positive for chlorine, use sustained over time
 - Kremer et al. (2011)
- Very low cost



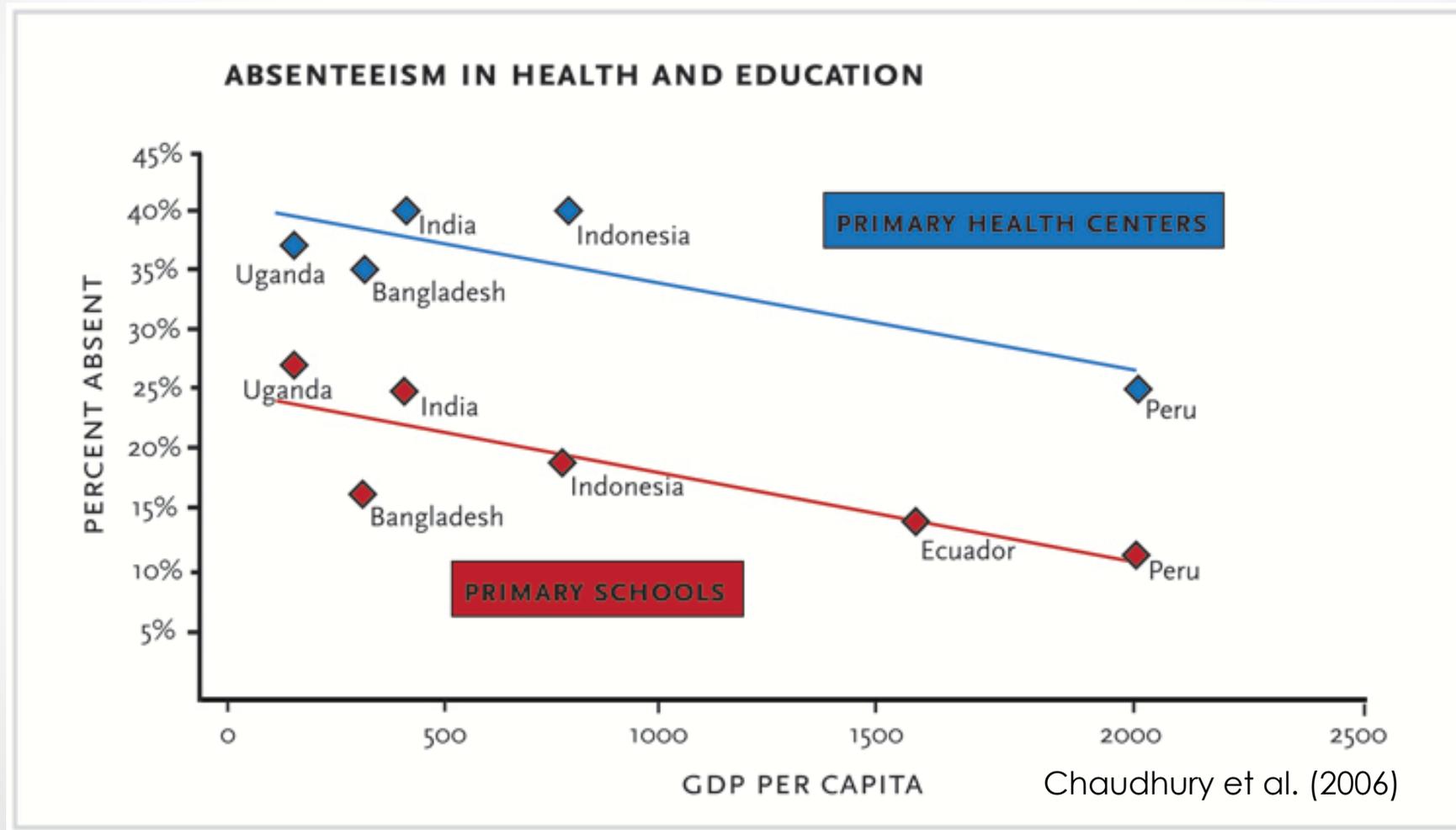
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Areas for future work

Methodological developments

Weak Incentives of Public Providers



Poor Quality

- In north Indian hospitals, physicians spent 3.8 min per patient, asked 3.2 questions, prescribed 2.63 medications (Das and Hammer, 2007)
- Frequent use of unqualified providers in some countries (Banerjee et al., 2004, Das and Hammer, 2005)

Approaches to Addressing Government Failure in Service Delivery

- Community mobilization for accountability
- Provider Incentives
- Paying for results
- Contracting for health

Community Mobilization and Accountability

- Björkman & Svensson (2009) - community monitoring of health services in Uganda
 - Provider absence 14% lower in treatment facilities
 - Vaccination rates increased 46%
 - 46% more children received vitamin A supplements
- Contrasting results in India education



Provider Incentives

- Banerjee et al. (2008) - monitoring program linking pay to nurse attendance in India
 - Initial attendance boost; disappears after 6 months (program undermined)
- Basinga et al. (2010) - Rwanda pay for performance program
- Ashraf et al. (2012) “No margin, no mission?”



Paying for Results?

- Olken et al. (2011) – block grants to communities tied to results
 - Regular weight checks for children and iron tablets for pregnant women increased
 - Malnutrition fell by 2.2 percentage points



Contracting for Health in Cambodia

- Bhushan et al. (2006) – Cambodia contracted out the management of healthcare to NGOs in some districts
- Targeted health outcomes increased one standard deviation
 - 42% increase in vitamin A and 36% increase in prenatal care coverage
 - Decreased absence rates among providers
- No change in non-targeted health outcomes
- Increased government spending in contract districts offset by decrease in private health spending

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Areas for Future Work

- Optimization failure and normative analysis in its presence
- Social norms in health, role of media (La Ferrara et al., 2008; Jensen and Oster, 2009)
- Health care issues once low-hanging fruit is picked: aging, curative care, social insurance
- Intersection of IO and health
 - Pharmaceutical markets (Goldberg, 2006; Yanagizawa-Drott, 2012; AMCs)
 - Private and public providers (Das et al. 2007)
- Political economy of health (Miller, 2008; Fujiwara, 2010; Duflo and Chattopadhyay, 2004)

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Methodological developments

Development of Methods

- Biggest change is growth of field trials since 1994
 - Natural extension of revolution in empirical methods in labor
 - Now feeding back from development economics to other fields
 - Previous trials measured impact of large-scale, often multi-faceted government programs – JTPA, headstart
 - In new approach, academics help design programs as well as test them, often incorporate multiple arms, iterative elements
 - Allows testing ideas from economic theory – e.g. separation of selection and treatment effects,, estimation of parameters of structural models
 - Health behavior is one example of how this is reshaping our understanding of determinants of behavior
 - Allows development and testing of ideas for policy (information on relative HIV risk by age, lentils for vaccines, chlorine dispensers)

Why Did Field Trials Take Off?

- Demonstration of feasibility
- Enabled by a host of practical innovations
 - Academics engaging with, and proposing ideas to, NGOs
 - Building organizations to conduct trials (within ICS, JPAL, IPA)
 - Iterative trials
 - Maximizing power with limited budgets – from cutting transport costs to well-crafted factorial designs

Stream of Technical Innovations

- Objective outcome measures to address reporting bias (client and provider presence, chlorine in water)
- New approaches to randomization, stratification procedures (Bruhn and McKenzie, 2009)
- Capturing and measuring spillovers
- Tests of larger-scale government programs and incorporation of additional variants into those programs (From PROGRESA to Baird et al., 2011, etc.)
- Integration of randomized trials with structural modeling
- Approaches for improving long-run follow up
- Measuring and addressing survey effects (Zwane et al., 2011)
- Analysis plans (Casey et al., 2012)

Field Trials and Economics

- New approach has radically changed day to day life of many economists
- Broadened conception of what economists do
- Some costs. Not for everyone. Important to remember to think like economists
- New insights for economics and for world from combining
 - Immersion in the social context
 - Empirical discipline of randomized trials
 - Analytical discipline of economics

END

Scrap Section



- 1. Impact of health
- 4. Methodological Issues

- 2. Health Investment
- 5. Areas for future work

3. Health care provision

Political economy of health

● A. Impact of Health
D. Government Failures

B. Market Failures
E. Health Provisions

C. Human Capital and Health Investment
F. Future Work
G. Methodology

● 41

● A. Impact of Health
D. Government Failures

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- Model implies:
 - People make the same calculation of expected health benefit against cost of treatment and prevention
 - If people decide to vaccinate, they will do it at once, without delaying
- Many people take up health prevention products at zero price, but not at small positive prices
- Assume people are present-biased, quasi-hyperbolic discounting where $\beta < 1$
 - Implies even small short-run costs can have big effect on consumer's behavior
 - Sophisticated present-biased may commit to vaccinate or treat chronic disease

- Puzzle: many existing technologies for prevention of communicable disease are highly effective, low cost, but incomplete use
 - Childhood immunization
 - 27 million children don't receive basic immunization package each year
 - Insecticide- Treated Nets (ITNs)
 - Reduce all-cause child mortality by 38% where malaria is endemic
 - Low coverage of ITNs in Africa
 - Deworming drugs
 - Water chlorination

Markets in health

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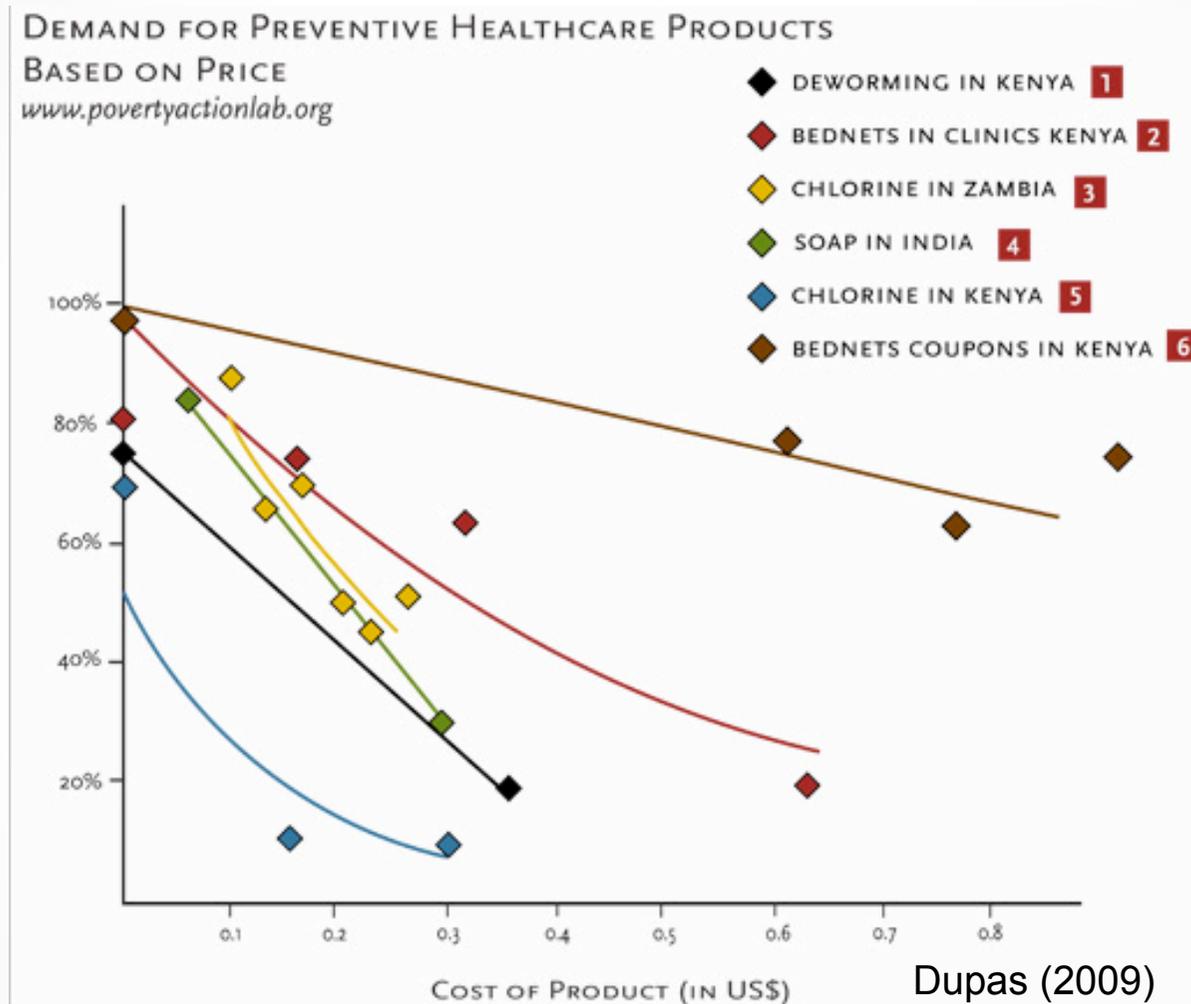
Within-household distribution

- Women
- Children
- Elderly

END

everything after this will not
be in presentation

Liquidity constraints



- low hanging fruit
- Curative care requiring diagnosis is challenge for future