Using Economics to Fight AIDS

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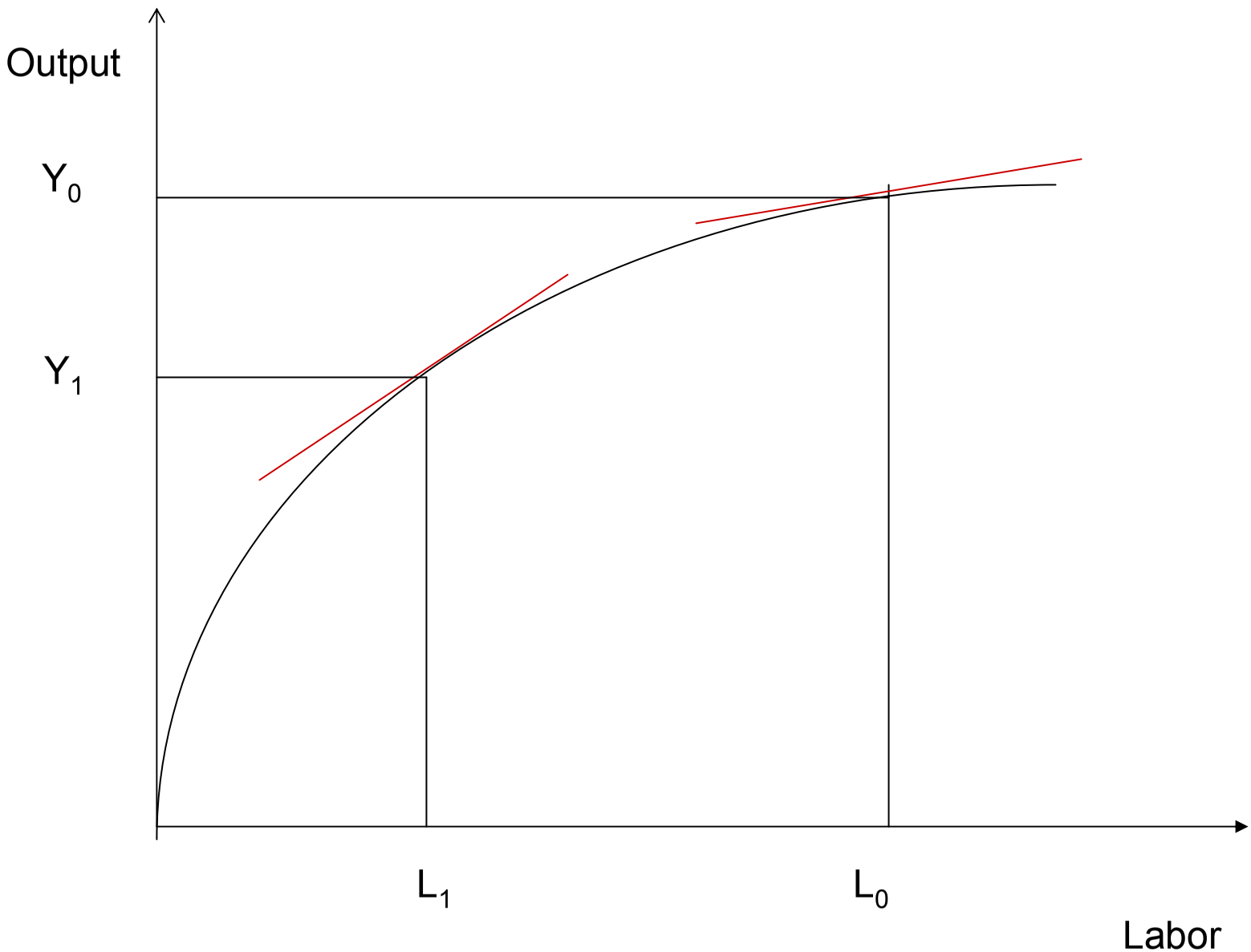
Two reasons why economics can help fight AIDS

- Resource allocation
  - How much public money should be spent on AIDS
    - Prevention?
    - Treatment?
- Behavior: contracting, avoiding contracting, testing, treatment—all involve behavioral choices

Resource allocation

- Macroeconomic costs of AIDS can be significant
  - AIDS as a labor supply shock (e.g., South African labor force expected to decline by 12.8 percent by 2010)


Output
Y_0
Y_1
L_1
L_0
Labor

Estimates of impact of AIDS on GDP growth (%)

Kambou, Devarajan and Over (1992)	Cameroon	-1.9
Cuddington (1993)	Tanzania, Malawi	-1.1 to -1.5
Arndt and Lewis (2000)	South Africa	-0.7 (per capita)
Bloom and Mahal (1997)	51 countries	0
Bonnel (2000)	47 countries	-0.7 (per capita)

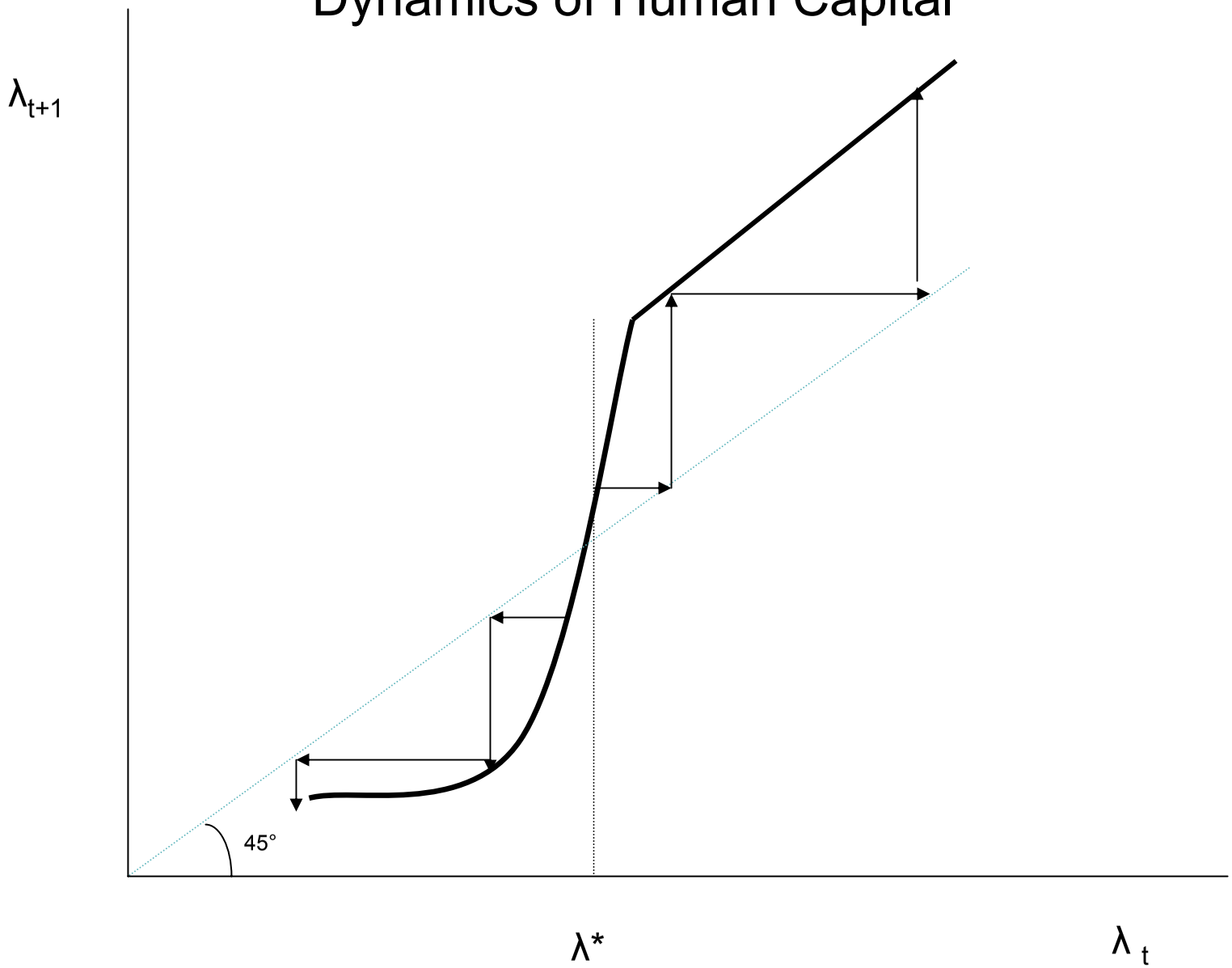
Resource allocation

- Macroeconomic costs of AIDS can be significant
  - AIDS as a labor supply shock
  - Human capital
    - AIDS is a disease of young adults
    - Reduces incentive and means to invest in children's education
    - Reduces parents' transmission of knowledge to their children

Implications

- Children's ability to invest in *their* children's education is lower, and so on…
- Vicious cycle
- Previous estimates of impact of AIDS may seriously underestimate the long-run impact

Dynamics of Human Capital



Effect of AIDS

	No AIDS					
Gene-ration	*Human capital*	*Education*	*Household income*			
1	2.62	0.50	19.5			
2	3.14	0.64	22.3			
3	4.32	0.97	29.6			
4	7.90	1.00	53.7			
5	13.85	1.00	94.7			

Effect of AIDS

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1	2.62	0.50	19.5	2.62	0.5	19.5
2	3.14	0.64	22.3	3.14	0.2	26.4
3	4.32	0.97	29.6	2.01	0	17.8
4	7.90	1.00	53.7	1.00	0	12.9
5	13.85	1.00	94.7	1.00	0	12.9

How to avert this disaster?

- Prevention
  - Condom use
  - Information campaigns
- Testing
- Treatment

Prevention: the price of condom use

- Gertler, Shah and Bertozzi, 2005
- Condom use changes sex worker's fees:
  - Clients pay +23% for unprotected sex, (+46% if sex worker is considered very attractive*)
  - Clients who request condom use pay +9%, sex workers who request not to use a condom (less than 2% of non-condom use encounters) charge 20% less
- Policy issues:
  - Supply side interventions are not enough

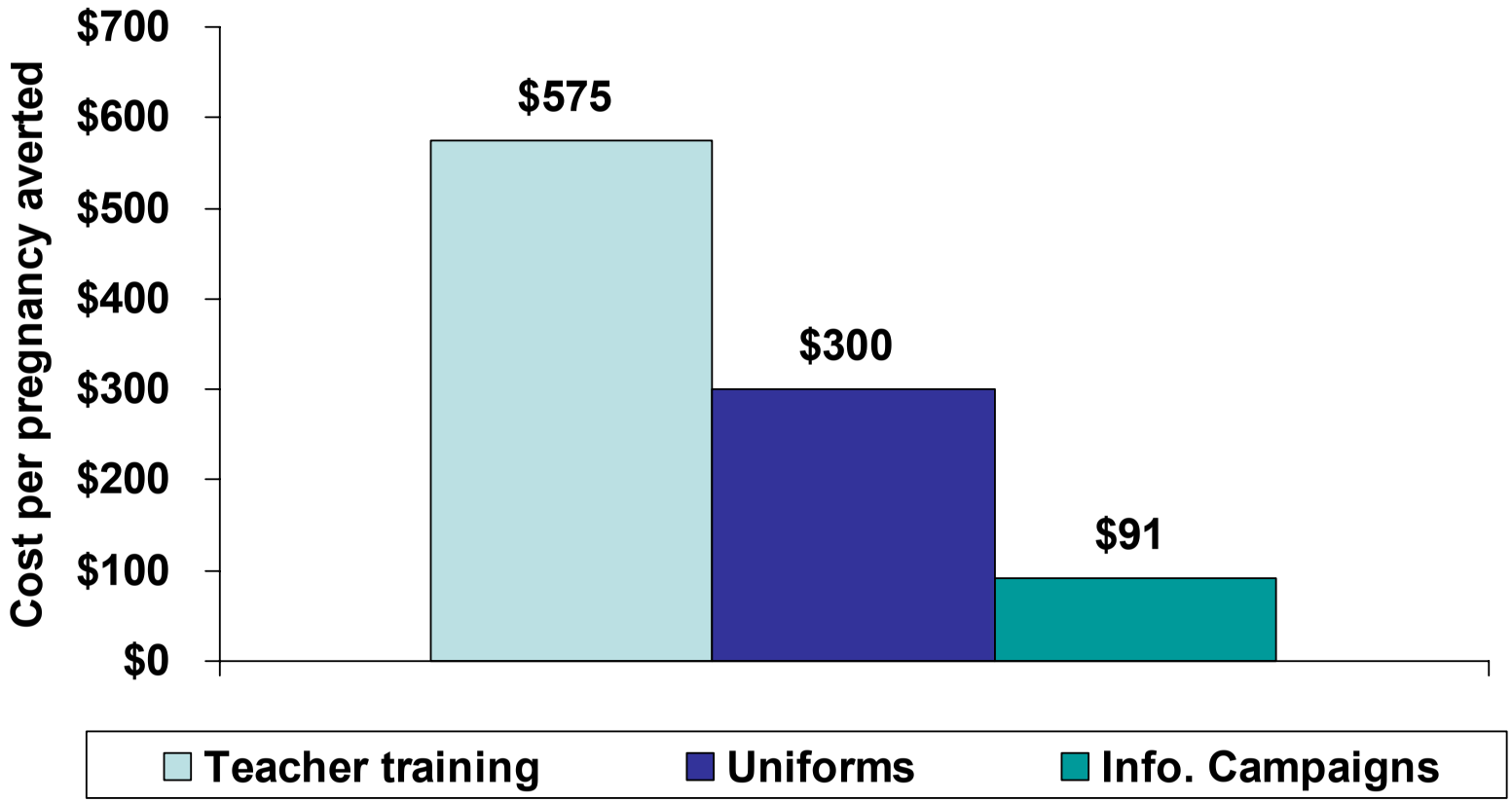
*Attractiveness of sex workers was determined by the interviewers

Prevention: Information campaigns

- Randomized control trial of providing information on risk of cross-generational sex in Kenya
- Childbearing (proxy for unprotected sex) was 31% lower in treatment group (drop of 1.7 percentage points)
  - Decrease is concentrated among cross-generational partners
  - No increase among same-age pregnancies, but some increase in (self-reported) sexual activity with same-age boys
  - Some evidence on information spillovers among girls, but not boys

Treatment	Effect
Training teachers in the Kenyan HIV/AIDS curriculum	No significant reduction in teen pregnancy, but increased likelihood that pregnancies occur within marriage
Organized debate and essay contest on role of condoms in preventing teens against HIV/AIDS	Some increased reporting of condom use
Reduced cost of education through free school uniforms	Reduction in dropout rates and in teen pregnancies
Information campaign for Kenyan teenagers to learn about high HIV prevalence among adult males	32% drop in teen pregnancies

Cost effectiveness of different measures: impact evaluation results

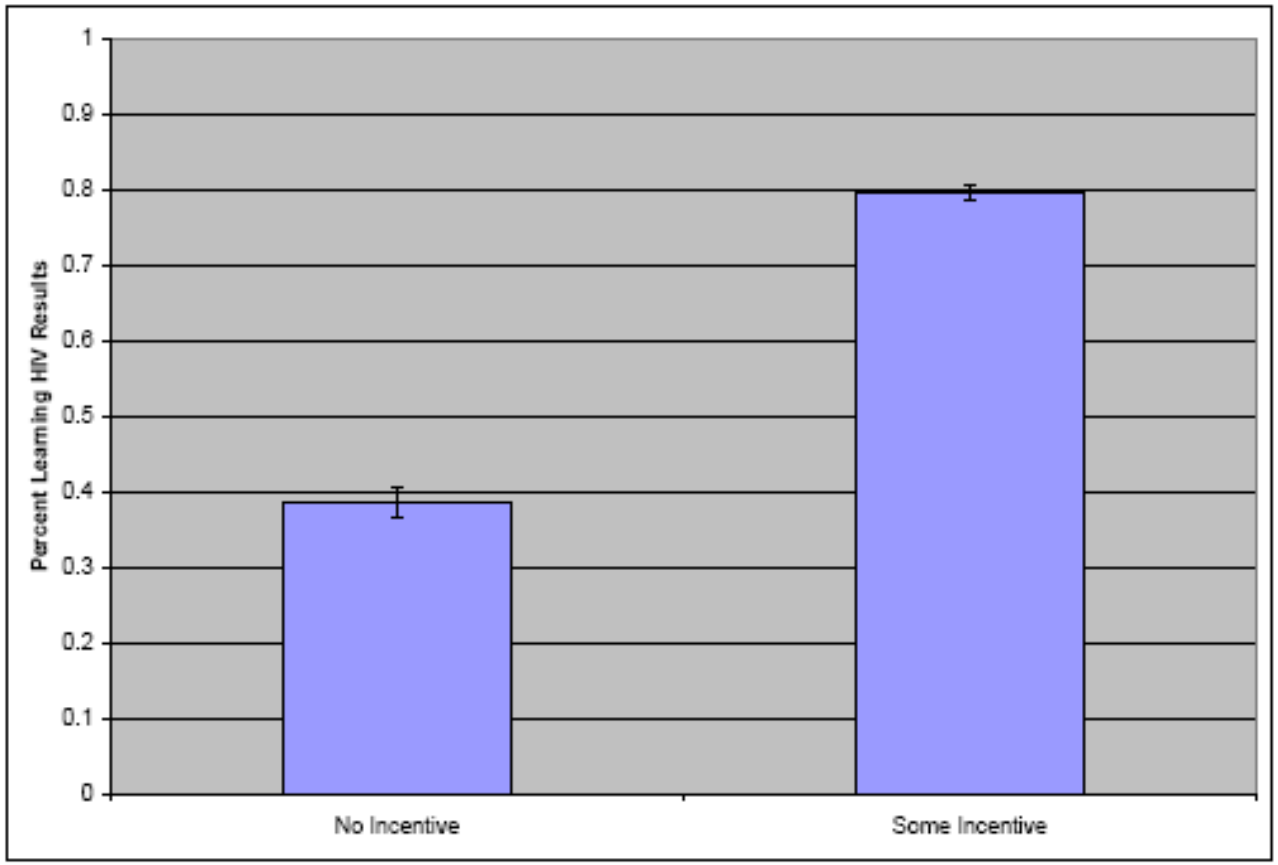


Source: Duflo, Dupas, Kremer, and Sinei (2006)

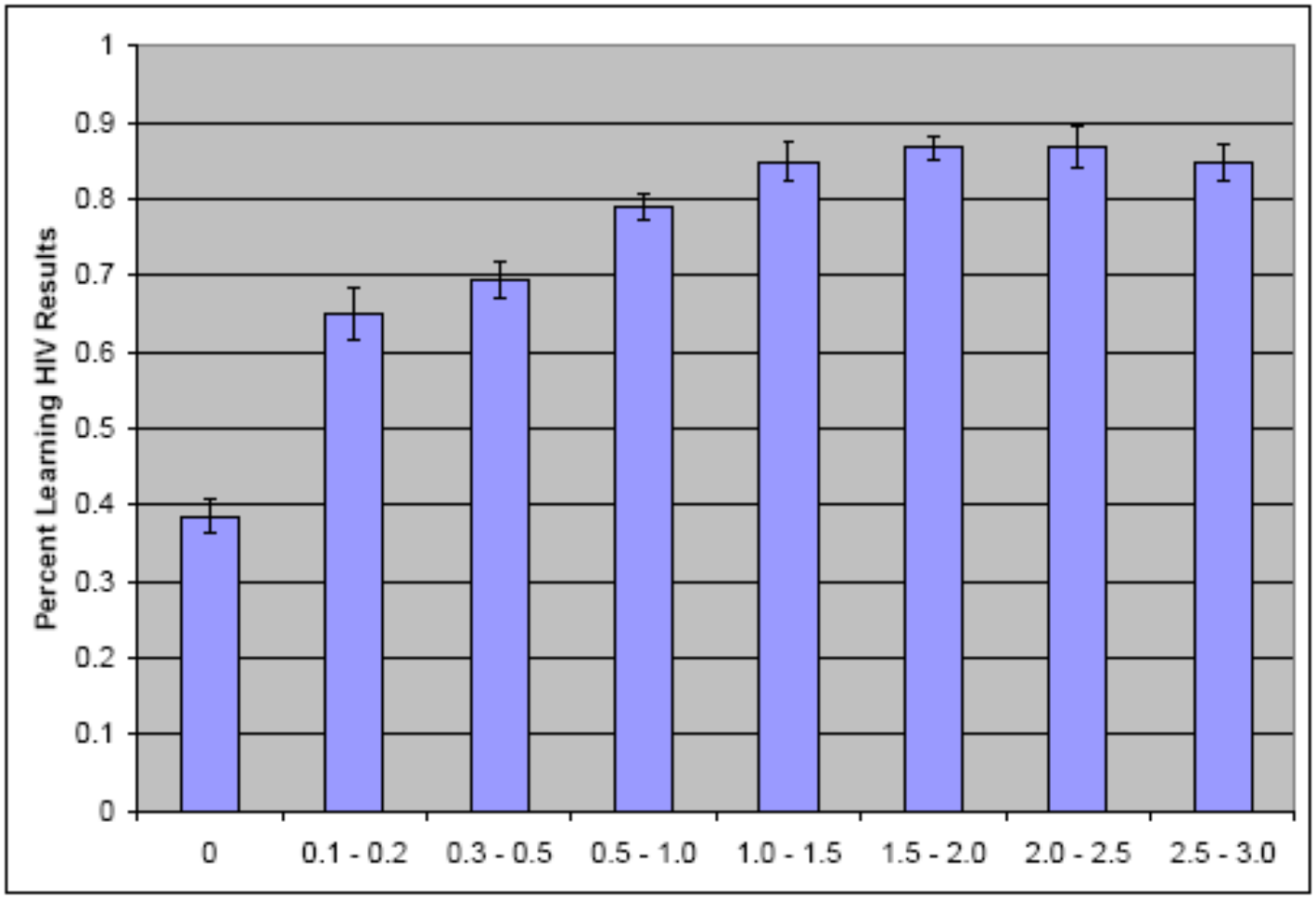
Testing: the effect of incentives

- Results from a RCT in Malawi with home-based testing and financial incentives to show up for results
  - Moderate turn up for results if no incentive (34%)
  - Even small financial incentive has big effect on returning for results

Percent Returning for HIV results



Effects of receiving some incentive



Value of incentives is in dollars, the average daily wage was $1.04, which was also the average incentive

Testing: the effect of incentives

- Results from a RCT in Malawi with home based testing and financial incentives to show up for results
  - Moderate turn up for results if no incentive (34%)
  - Even small financial incentive has big effect on returning for results
  - Incentives closed a gender gap in a district where women's movement was more restricted (no gap in other districts)
  - Living more than 1 km from counseling and testing center reduced chance of coming for results by 7%
  - Those who test positive & got results are more likely (+28%) to buy a *few* more (2) condoms in follow up interview

Testing: sexual behavior

- On *average,* for a sample in the U.S., not a big effect of testing. But this masks heterogeneity.
- It's the degree of surprise that matters:
  - Sexual contact +20% for people who thought they were high risk, but tested negative
  - Sexual contact -50% for people who thought they were low risk, but tested positive
- Policy becomes more complicated
  - Consider what you tell the negatives
  - Think about how beliefs change during the course of an epidemic

Treatment does more than provide health benefits (Kenya)

Very large (and rapid) increases in patient labor supply within 6-9 months

- 16.7 percentage points labor force participation rate; 6.9 Hours

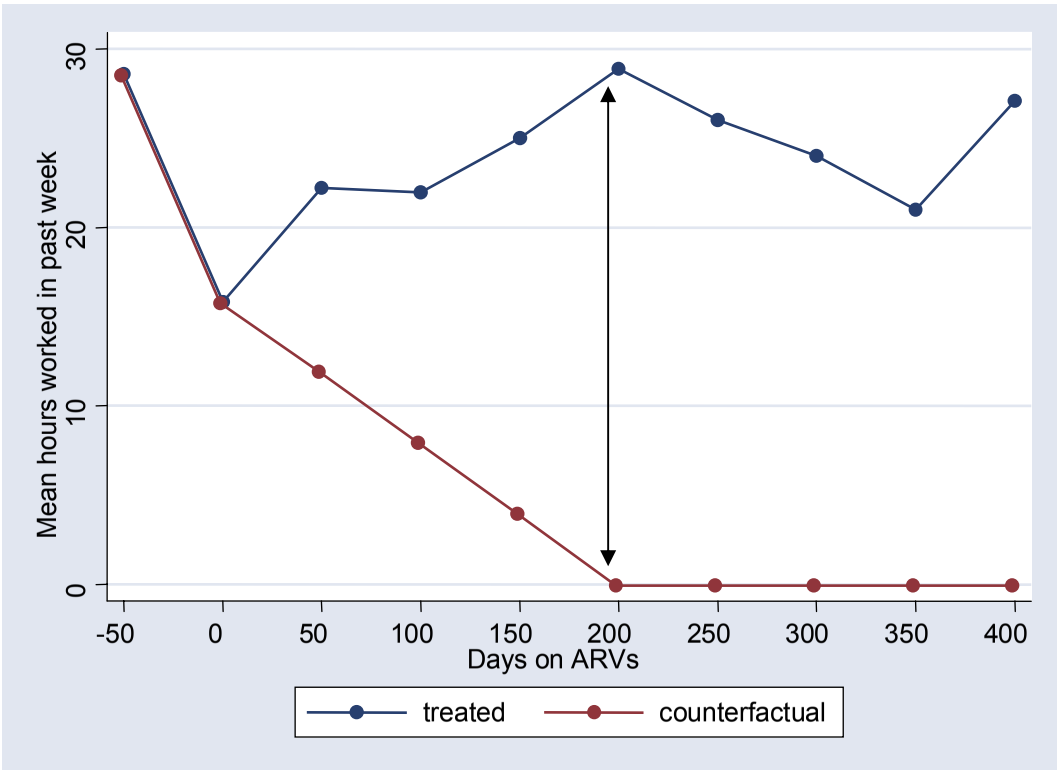
Treatment: Rapid effects of ARVs

We know what happens to counterfactual group

- Medical evidence: patients continued decline in health and death

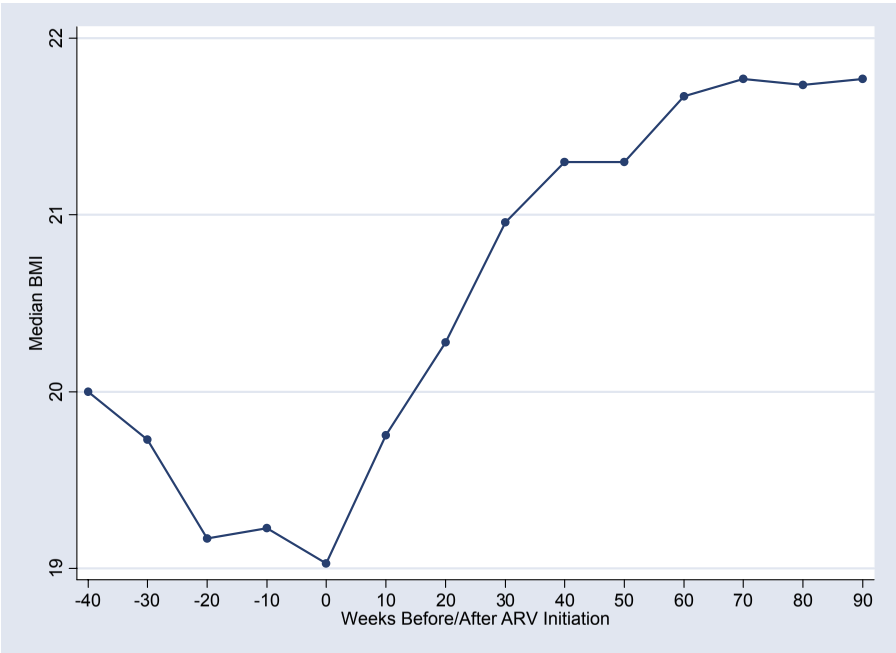
Allows estimation of upper bound of treatment impact

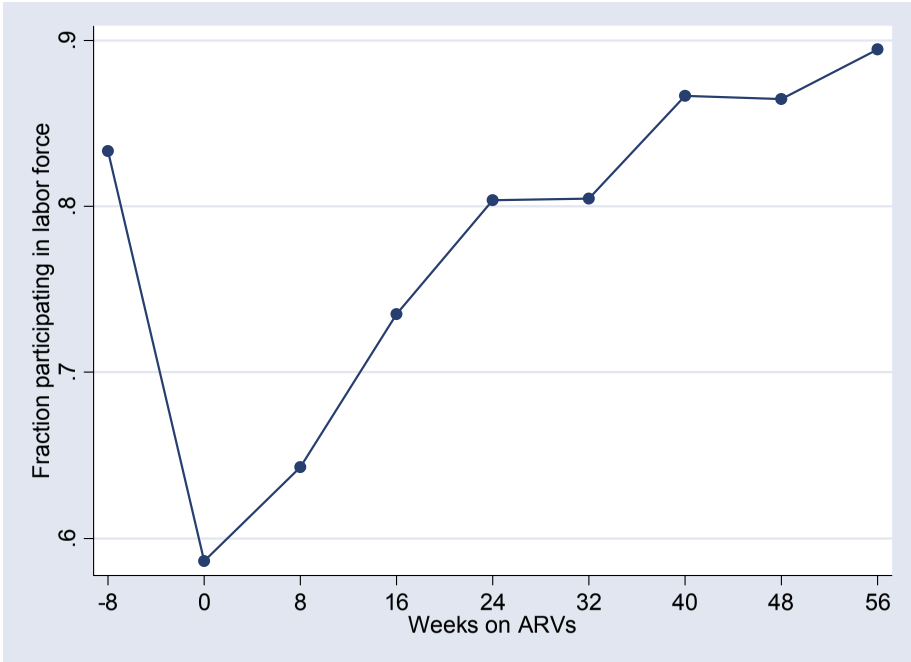
- Zero labor supply in round 2



BMI Before and After ARV Therapy

LFP before and after ARV Therapy





Source: AMPATH Medical Records System – data as of March 2005.

Source (right): Household survey data.

Treatment does more than provide health benefits

Very large (and rapid) increases in patient labor supply within 6-9 months

- 16.7 percentage points labor force participation rate; 6.9 Hours
- Compared to inevitable death more than quadruples numbers

- With sizable spillover benefits to children of patients
  - Young boys reduce their market labor supply by 6.9 hrs
  - Kids increase school attendance by 6.7 hrs per week
  - Large nutritional impacts, particularly for the most malnourished children.

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