

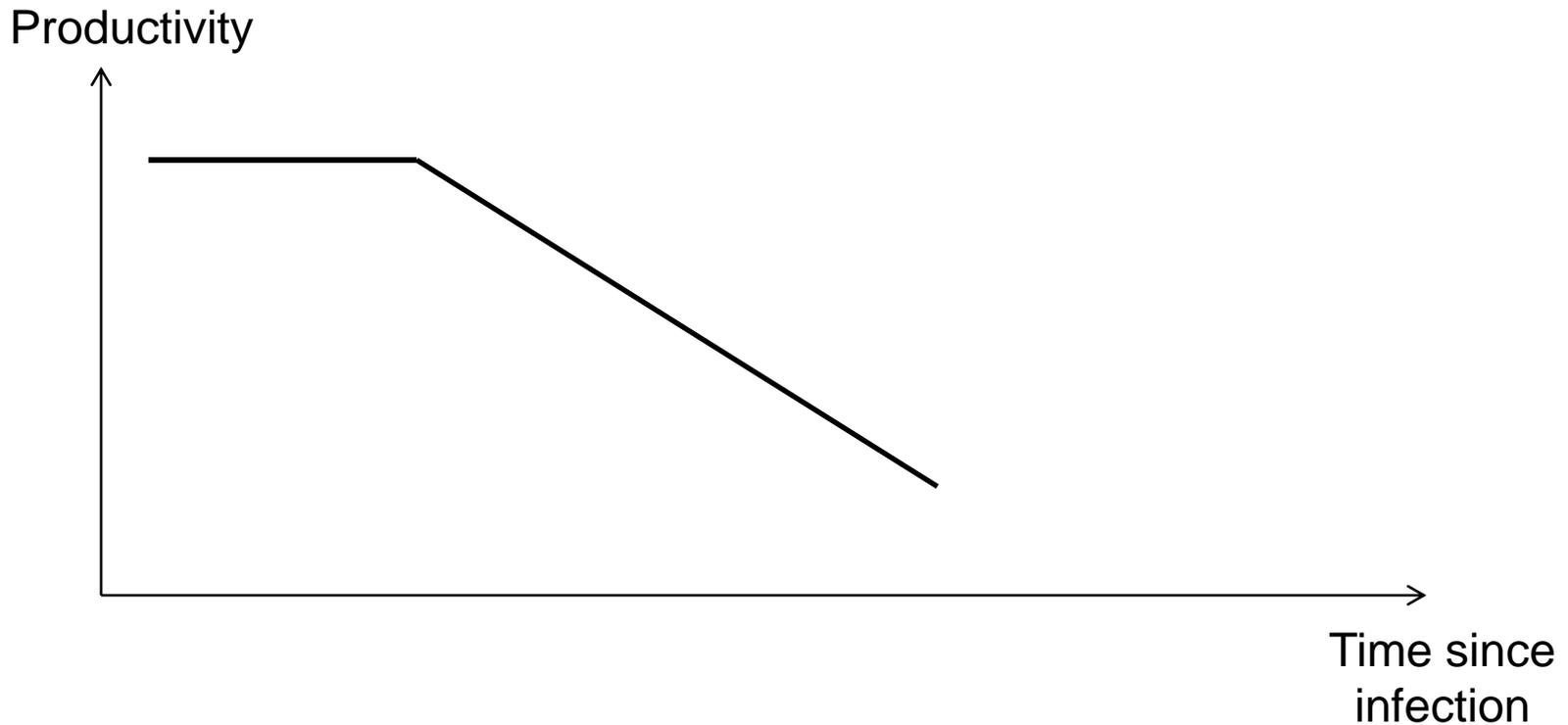
Discussion

Epidemiology and Economics - Modeling
Scenarios for the End of AIDS

Individual- and household-level economic impacts

- Benefits of early ART that may not be reflected in cost-effectiveness analyses
- **Cost-benefit** analyses that include such benefits may reflect the full economic returns to investments in early ART

What we know about economic benefits of ART so far



SEARCH pilot study data: economic decline may begin at high CD4

Improved employment and education outcomes in households of HIV-infected adults with high CD4 cell counts: evidence from a community health campaign in Uganda

Harsha Thirumurthy^a, Gabriel Chamie^{b,c}, Vivek Jain^{b,c}, Jane Kabami^c,
Dalsone Kwarisiima^c, Tamara D. Clark^{b,c}, Elvin Geng^{b,c},
Maya L. Petersen^d, Edwin D. Charlebois^{b,c}, Moses R. Kanya^{c,e},
Diane V. Havlir^{b,c}, the SEARCH Collaboration

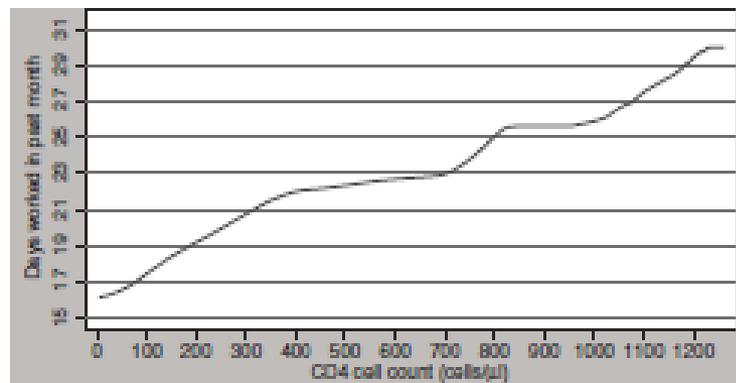
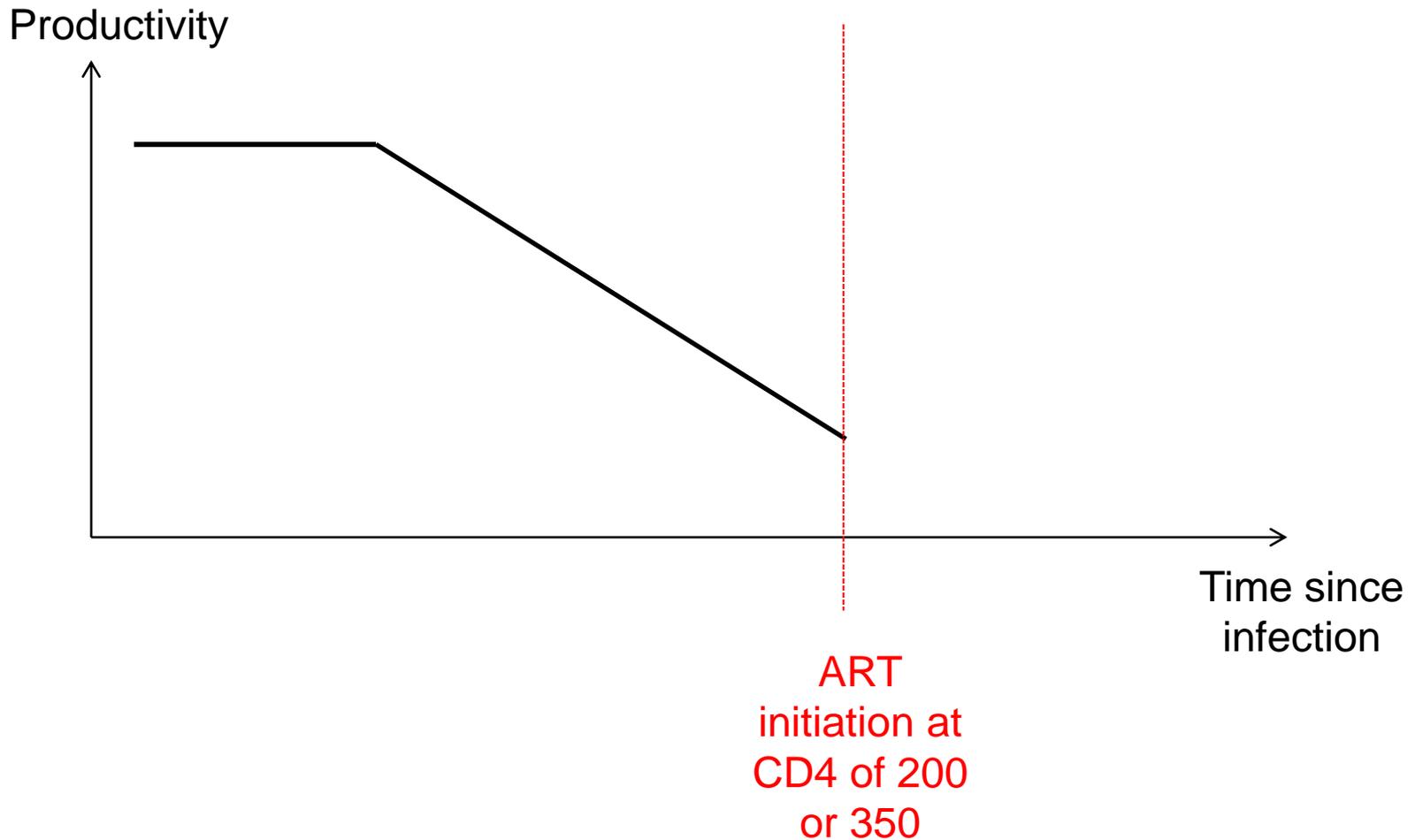
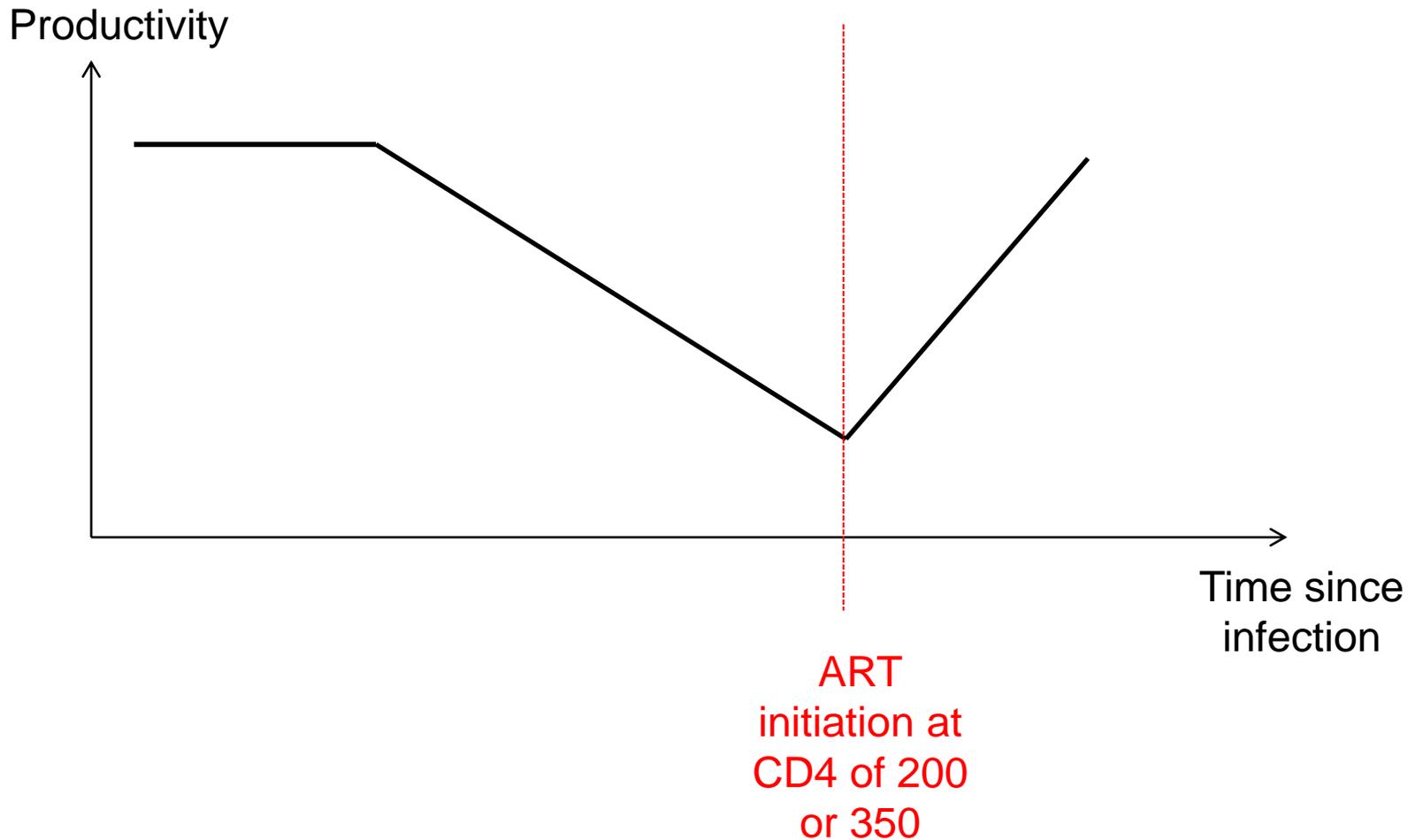


Fig. 1. Nonparametric regression results showing association between employment outcomes and CD4 cell counts among HIV-infected adults not on antiretroviral therapy.

What we know about economic benefits of ART so far



What we know about economic benefits of ART so far

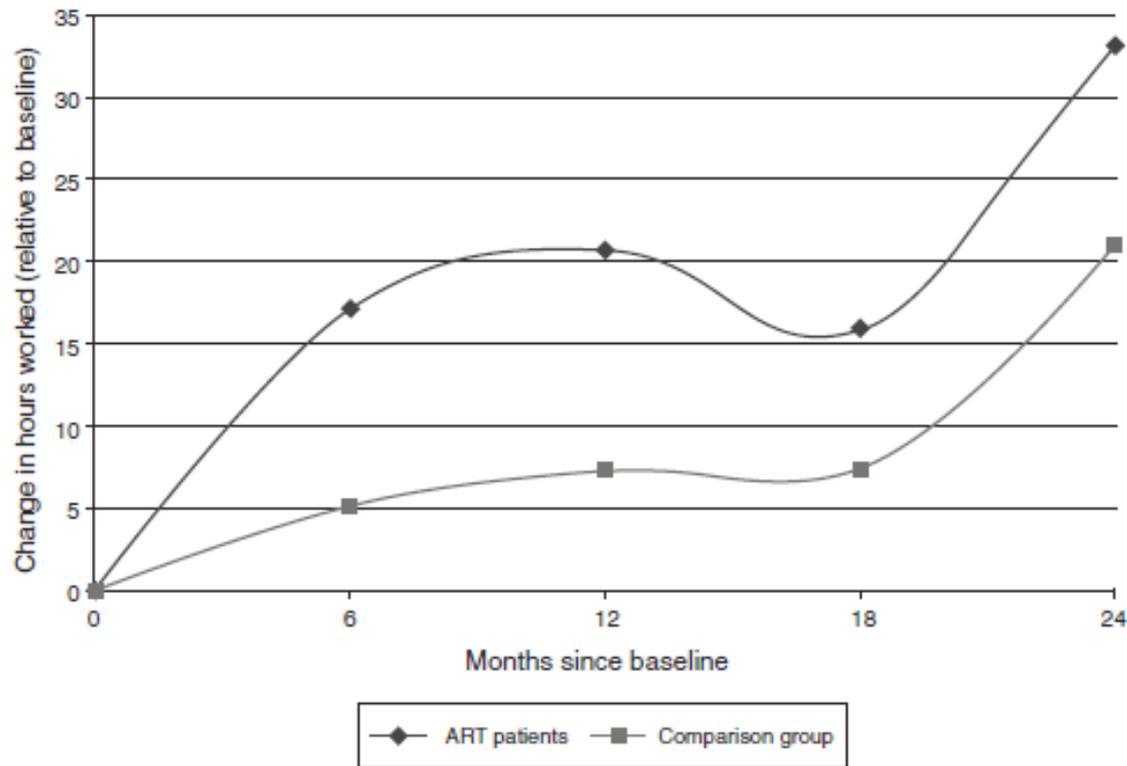


“Standard” ART initiation: Numerous studies showing improved individual/household economic outcomes

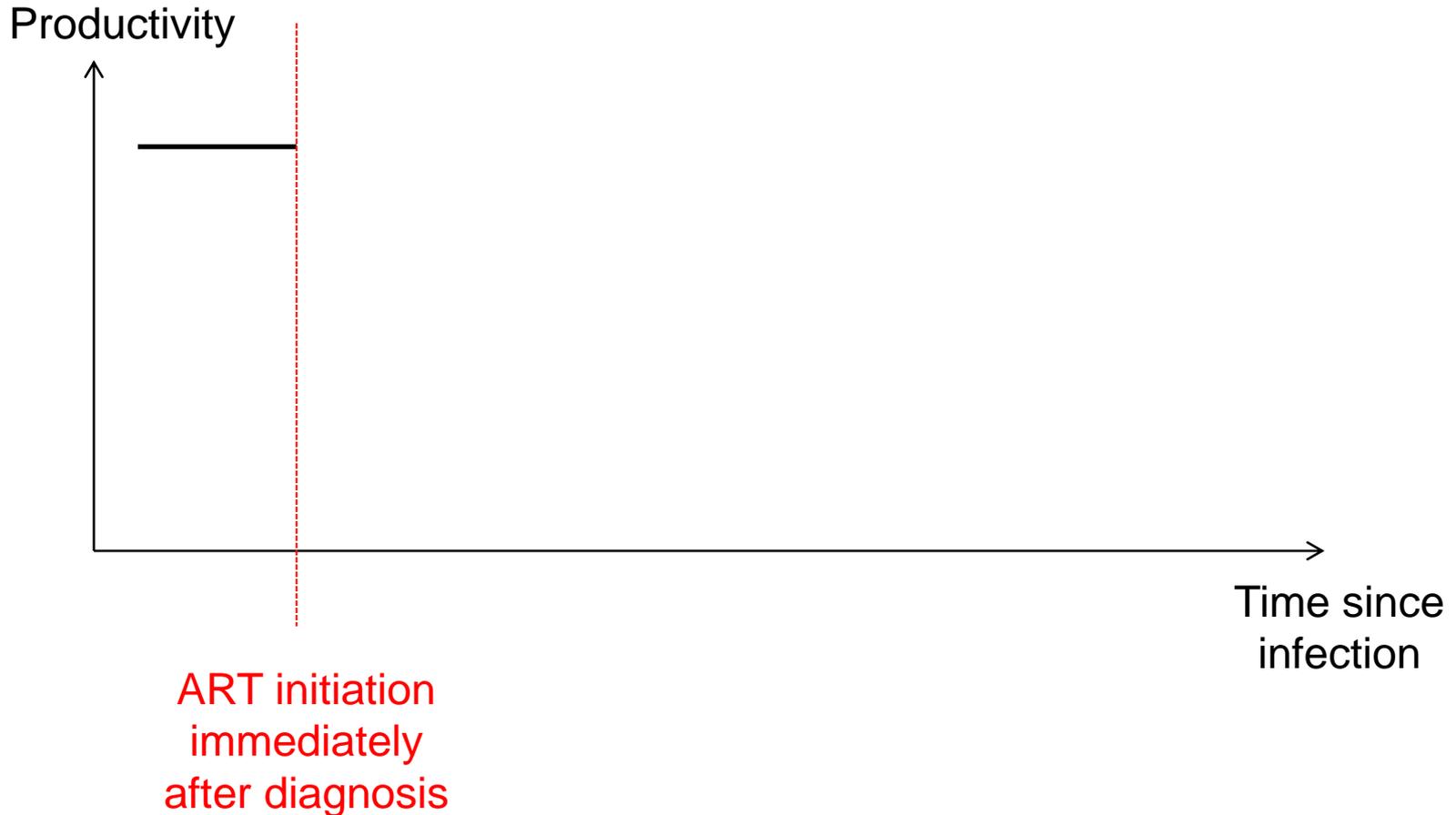
- Studies in Kenya documented gains in employment and labor productivity
 - Thirumurthy et al *JHR* 2008, Larson et al *AIDS* 2008, Rosen et al *PLoS One* 2010
- Improvements in children’s education outcomes have also been documented
 - Graff Zivin et al *JPE* 2009

A typical employment response following ART initiation at low CD4

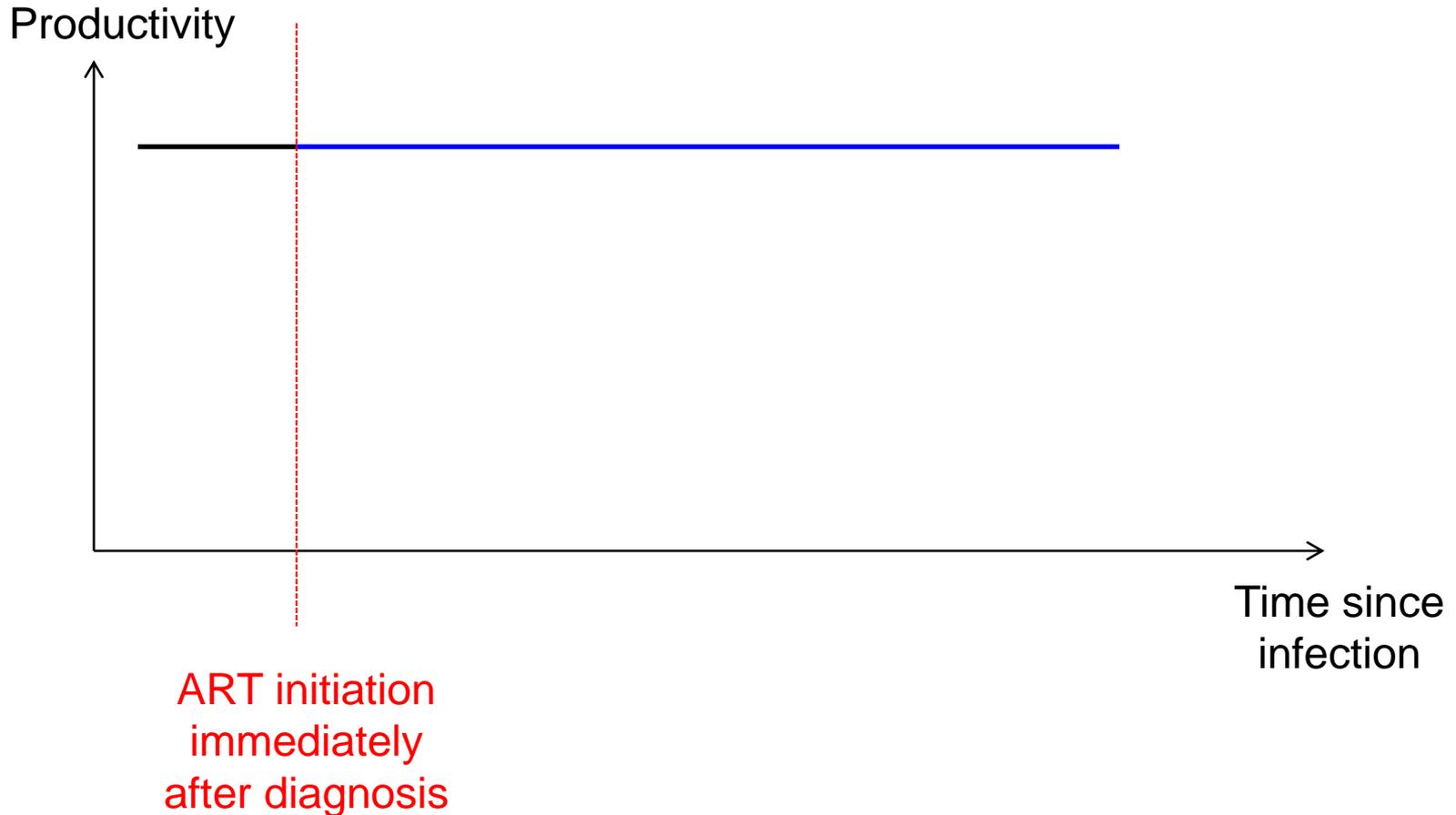
- Data from Tamil Nadu ART programs



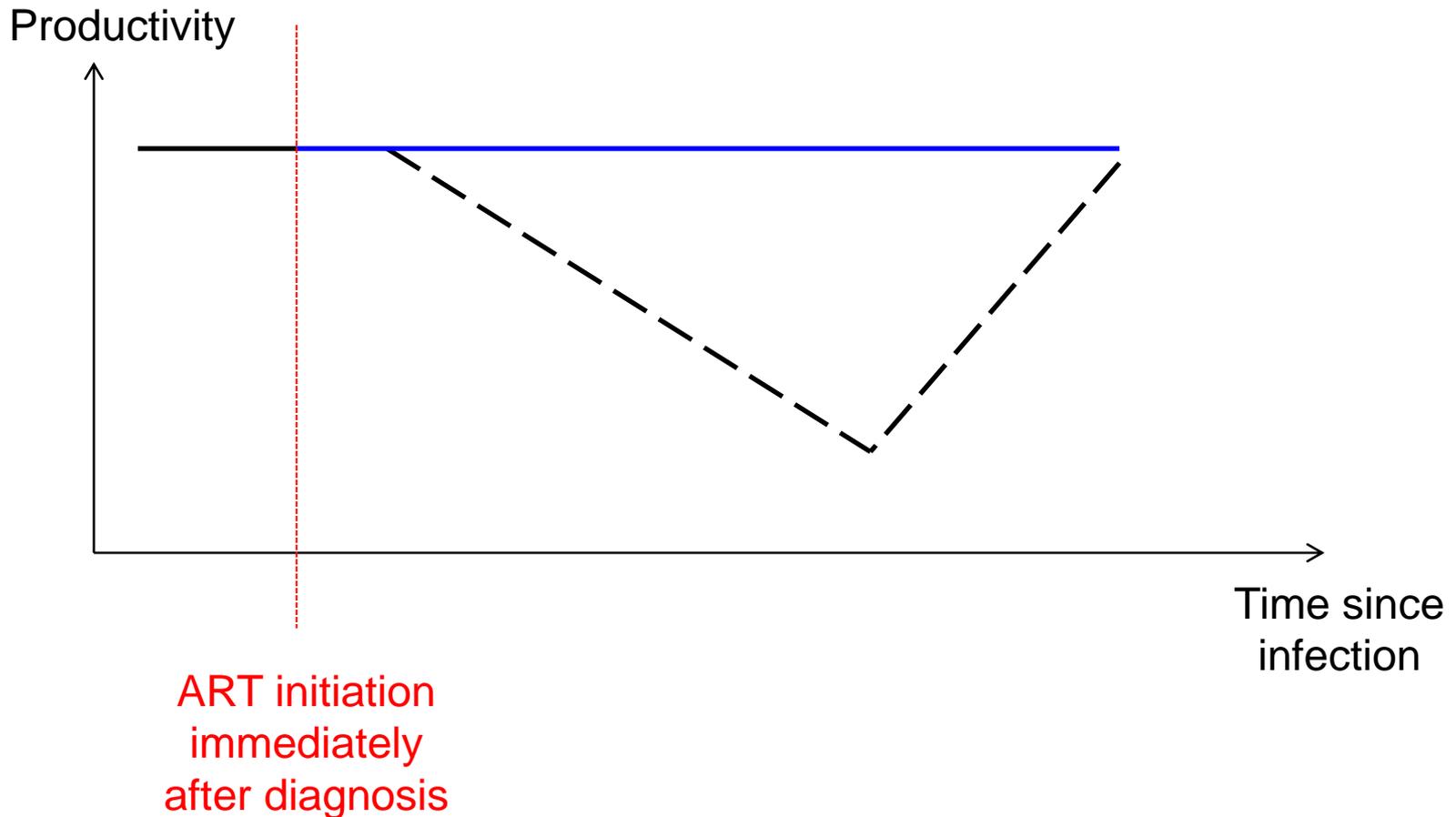
Potential economic benefits from early ART initiation



Potential economic benefits from early ART initiation



Potential economic benefits from early ART initiation



SEARCH trial Kenya/Uganda should provide data on this

- Economic benefits of early ART intervention may be sizable
 - Particularly for HIV-infected adults/households and those at risk of acquiring HIV
- Difficult to extrapolate, however, to macroeconomic impacts
 - May depend on HIV prevalence in region/country

Behavioral factors may be critical for optimizing prevention/economic benefits

- Uptake of HIV testing at regular intervals
 - How to do it well, how to do it in low-cost ways
- Retention in care
- Adherence to ART
- Provider behaviors

What can economics offer?

- Behavioral economics and psychology: focus on choices and decisions made by individuals
 - Could offer insights on how to tackle key issues such as uptake of HIV testing and retention in care
- Status quo bias
- Immediate gratification
- Self control problems

Incentives and behavior

- Financial and non-financial incentives increasingly being used to motivate patients and general populations to change behavior
 - Often as part of schemes aimed at reducing rates of obesity, smoking, etc.
 - Common in developed countries and becoming prominent in developing countries
 - Progresa program in Mexico as a lead example (conditional cash transfers for education)

Rationale for incentives

- Theory: provide immediate reward for behaviors that usually provide health gains in the longer term
 - Also capitalize on “present bias” (tendency for to pursue small immediate rewards instead of rewards that are distant but more valued)
- Costs are low in comparison to cost of ART

Evidence so far

- Positive effects of incentives have been found for drug abstinence
 - Short-term effects usually large but evidence on sustained effects less well-known
- Incentives also more effective in increasing performance for other health behaviors
 - Attending clinic appointments, vaccinations
 - Some favorable evidence for adherence (Volpp BMC HSR 2010)
 - HIV testing (Thornton AER 2008)

Recent evidence from SSA

- Experiment in rural Malawi randomly assigned monetary incentives to collect HIV test result after being tested at home (Thornton, AER 2008)
 - Without any incentive, 34 percent of the participants learned their HIV results
 - However, even the smallest incentive (less than \$1) doubled that share
- More recently, evidence that CCT for education can reduce HIV incidence (Baird et al Lancet 2012)

Concerns and other opportunities

- Concerns about incentive programs
 - Reduce intrinsic motivation once incentives are stopped
 - Sustainability (depends however on what happens in absence of intervention)
- Scope for applying other lessons from behavioral economics
 - “Status quo” bias as rationale for opt-out and community-wide testing campaigns
 - Mobile phone-based interventions to provide salient messages, reminders, and notifications