

African Fertility Transitions and Gender Parity in Schooling



A Partial Assessment

Questions and Overview

OVERVIEW

QUESTIONS

- 1. **How much** can African fertility transitions narrow the region's gender gap in schooling?
 - 1. **A partial answer**
(multiple pathways, brief snapshot; few countries;)
 - 2. ... **But Useful Addition**
(focus and approach)
- 2. **Under which conditions** is this narrowing likely to be substantial?
 - 3. **Yielding context-specific understanding** of gender-parity dividends

A Partial Assessment

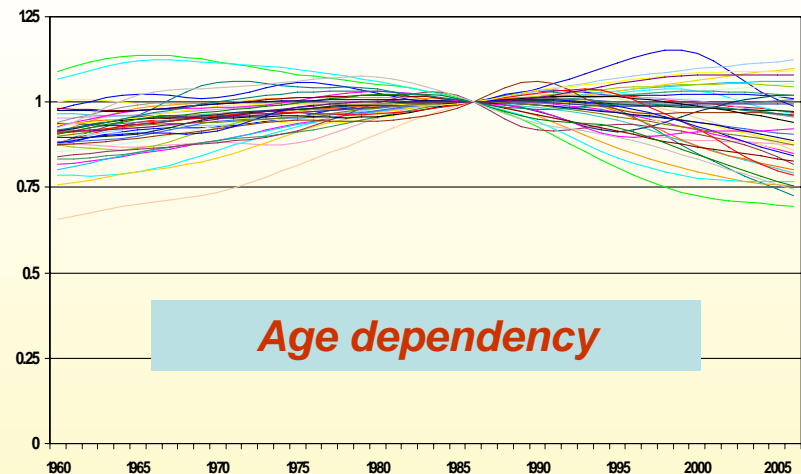
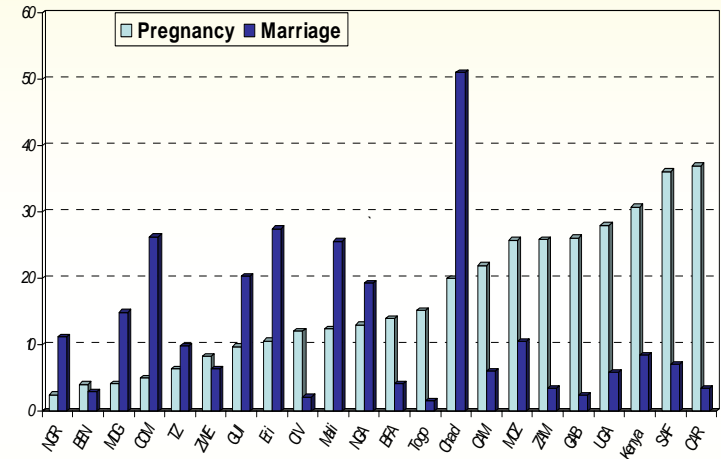
- **1. One of several pathways**

(1) reduced pregnancy-related dropouts; (2) changes in women's life course; (3) change in dependency ratios; (4) **reduced resource dilution**

- **2. A brief snapshot**

Study covers (1) a relatively early stage in the transition; (2) annual not cumulative effect on enrollment (3) effects within a single generation

Pregnancy-Related Dropouts



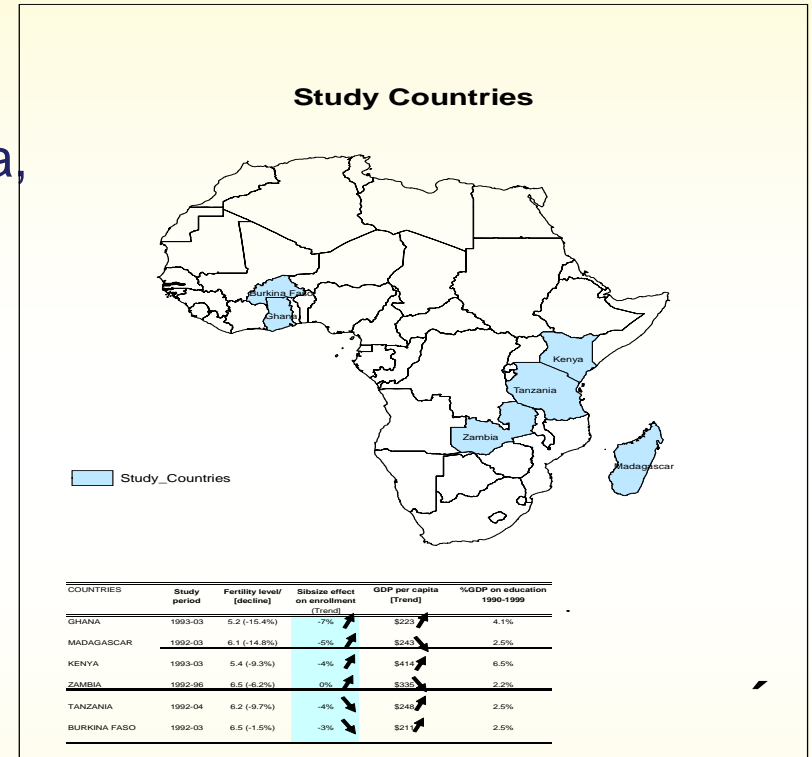
A Partial Assessment

- **3. Few countries**

Six diverse but non-representative countries (Burkina Faso, Ghana, Kenya, Madagascar, Tanzania, Zambia).

- **4. A ballpark estimate; emphasis on favorable circumstances**

Imprecision and bias in dilution effects, (treatment of endogeneity, time variation, non-linearity issues ...);



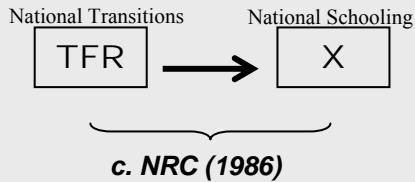
Extending Previous Work (Focus)

- From Cross-sectional to Historical Analysis
- From LAC and Asia to Sub-Saharan Africa
- From Overall effects to sex-

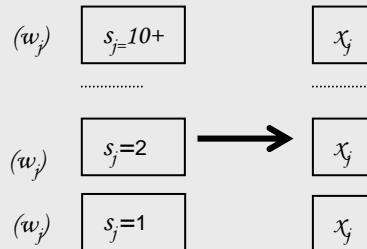
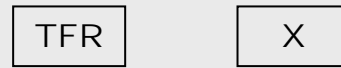
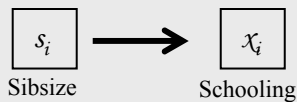


Extending Previous Work (Approach)

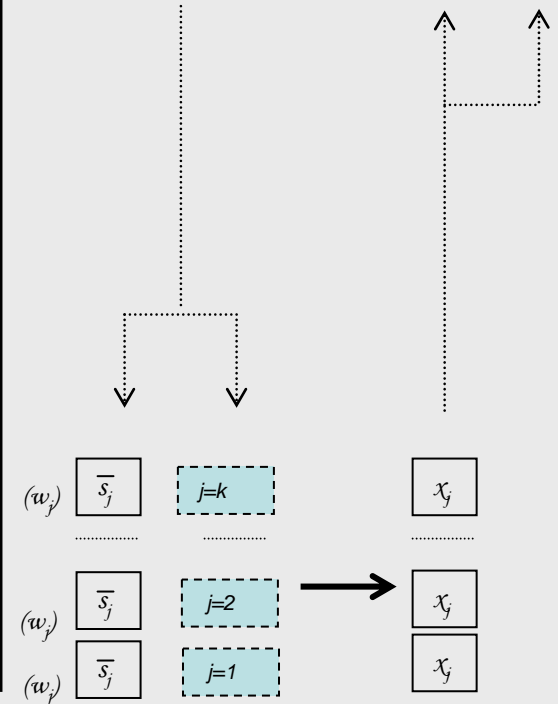
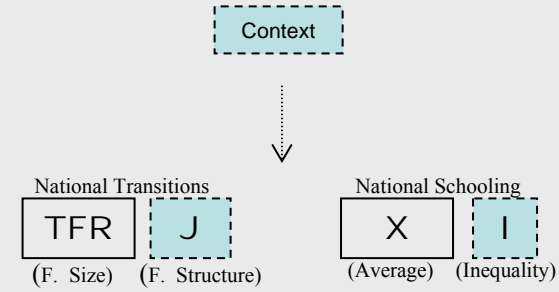
Macro-level



Micro-level



d. Knodel et al. (1990)



e. Proposed formulation

Extending Previous Work (Approach)

- Idea= Decompose the historical changes in gender parity into the influences of changes in (a) family size, (b) family structure, (c) socioeconomic / policy conditions, and (d) dilution effects

$$\Delta R \approx \left[\sum \bar{\beta}_s \bar{w}_j * (\Delta S_j) \right] + \left[\sum \bar{X}_j * (\Delta w_j) \right] + \left[\sum \bar{w}_j * (\Delta \alpha_j) \right] + \left[\sum \bar{w}_j * ((\bar{S}_j \Delta \beta_s) + \Delta \beta_j) \right]$$

F. size F. structure Socioeco context Dilution context

Data Needs and Source

- NEEDS: HISTORICAL DATA ON

- family size
- family structure
- family SES (and other characteristics) and baseline chances of enrollment
- ***dilution coefficients***

- SOURCE: DHS

- Six (6) DHS countries with multiple surveys ($N_i > 3,000$)
- Time Frame 1992/3 – 2003/4
- Diverse set of countries
 - demographic transition;
 - gender convergence;

Study Countries



COUNTRIES	Study period	Fertility level/ [decline]	Sibsize effect on enrollment (Trend)	GDP per capita [Trend]	%GDP on education 1990-1999
GHANA	1993-03	5.2 (-15.4%)	-7% ↗	\$223 ↗	4.1%
MADAGASCAR	1992-03	6.1 (-14.8%)	-5% ↗	\$243 ↘	2.5%
KENYA	1993-03	5.4 (-9.3%)	-4% ↗	\$414 ↗	6.5%
ZAMBIA	1992-96	6.5 (-6.2%)	0% ↗	\$335 ↘	2.2%
TANZANIA	1992-04	6.2 (-9.7%)	-4% ↘	\$248 ↗	2.5%
BURKINA FASO	1992-03	6.5 (-1.5%)	-3% ↘	\$211 ↗	2.5%

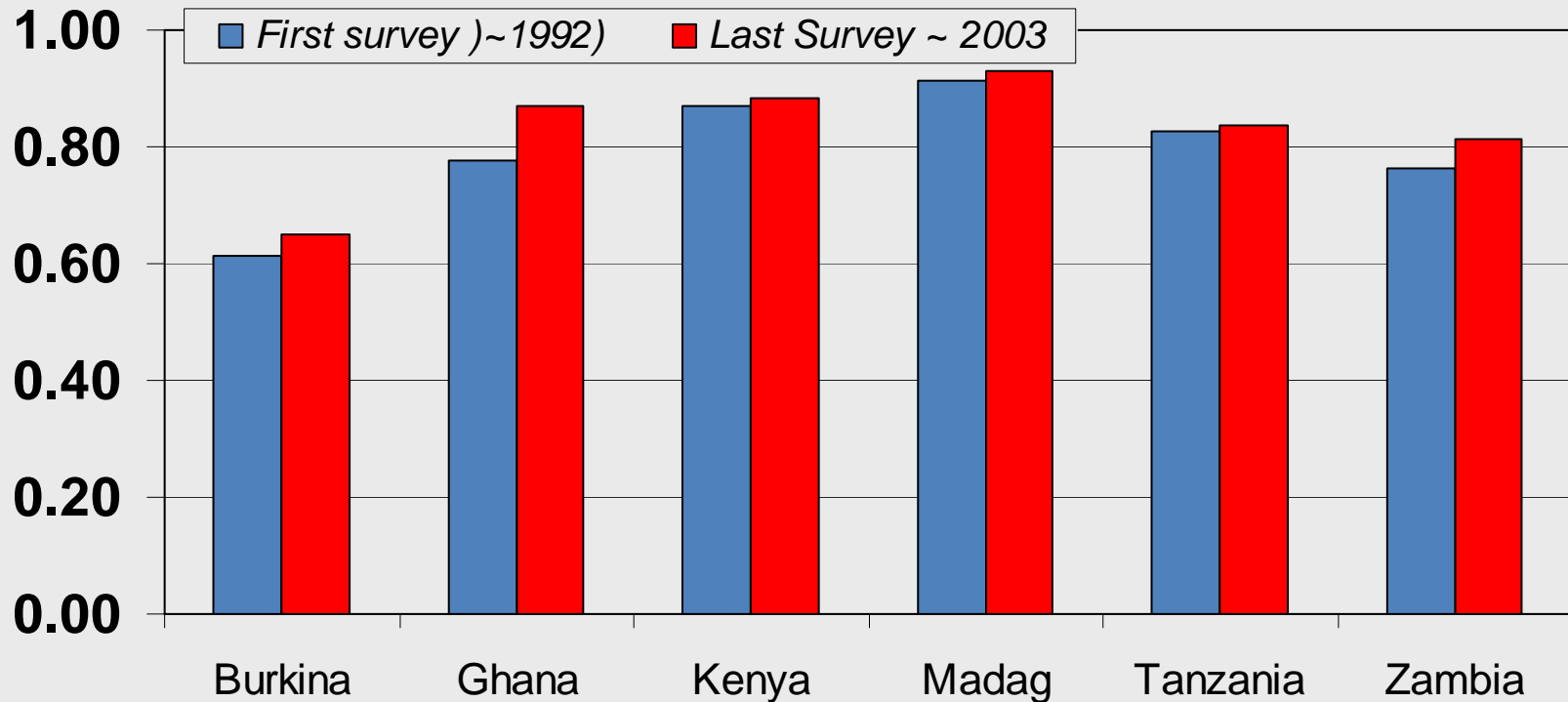
A Diverse Set of Countries

Appendix Table 1. Characteristics of national transitions in the six study countries

CHARACTERISTICS OF NATIONAL TRANSITIONS	Type 1		Type 2		Type 3	
	Increasing dilution; from initially high levels		Increasing dilution; from initially low levels		Declining dilution;	
	<u>MADAGASCAR</u>	<u>GHANA</u>	<u>ZAMBIA</u>	<u>KENYA</u>	<u>TANZANIA</u>	<u>BURKINA FASO</u>
	1992-2003/4	1993-2003	1992-1996	1993-2003	1992-2004	1992/3-2003
CONTEXTUAL CHARACTERISTICS						
1. Dilution environment						
Dilution from having one additional sibling	5% [+]	7% [+]	0% [+]	4% [+]	4% [-]	3% [-]
Dilution from being orphaned or fostered	70% [+]	62% [+]	60% [-]	89% [+]	79% [-]	75% [-]
2. Socioeconomic/ policy environment 3						
GDP per capita (US \$)	243 [-]	223 [+]	335 [-]	414 [+]	248 [+]	211 [+]
Spending on education (% GDP during the 1990s)	2.5%	4.1%	2.2%	6.5%	2.5%	2.6%
INTRINSIC CHARACTERISTICS						
3. Fertility and sibsize 1						
Total Fertility Rates ^a	6.1 [-14.8%]	5.2 [-15.4%]	6.5 [-6.2%]	5.4 [-9.3%]	6.2 [-9.7%]	6.5 [-1.5%]
Average Sibsize	6.1 [-10.2%]	5.0 [-3.2%]	6.0 [-4.4%]	6.2 [-12.7%]	5.9 [-1.6%]	5.4 [-1.3%]
4. Family Structure 1						
Percent of children living with unmarried mothers	9.6 [+13.7%]	5.9 [+7.6%]	7.2 [+36.4%]	8.2 [+29.5%]	6.9 [+3.8%]	2.0 [+57%]
Percent orphans and fostered children	35.5 [-14.2%]	37.7 [+0.6%]	35.5 [+7.9%]	24.5 [+13.5%]	36.5 [+8.0%]	32.1 [-12.7%]

A (Small) Narrowing of Gender Gaps

Female-to-Male Ratio in Enrollment (11-20 year olds)

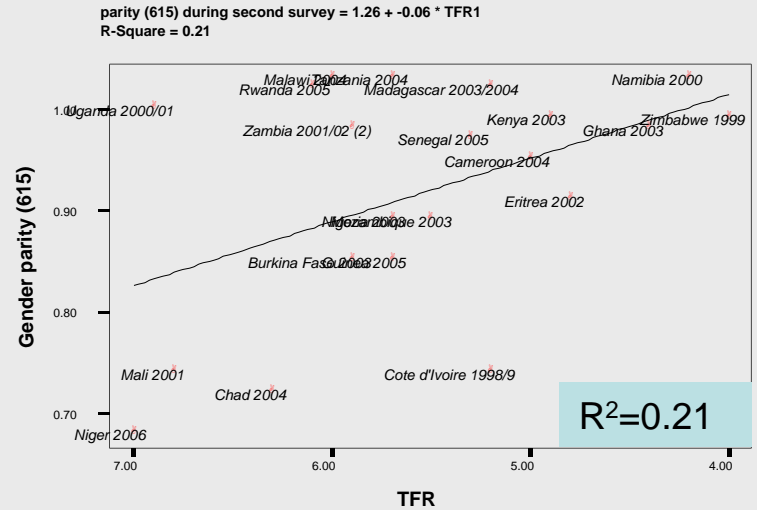
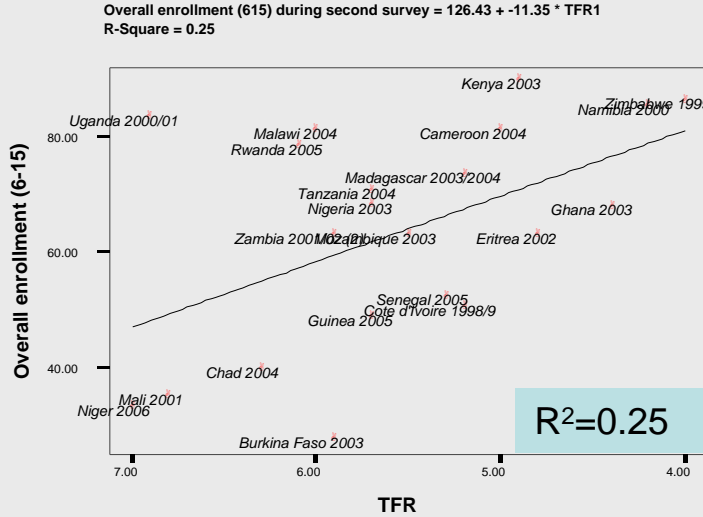


Macro-Level Evidence (I)

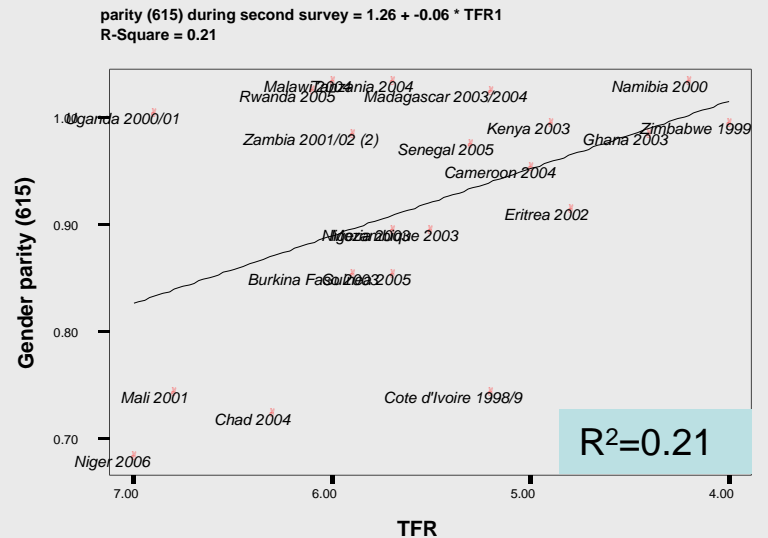
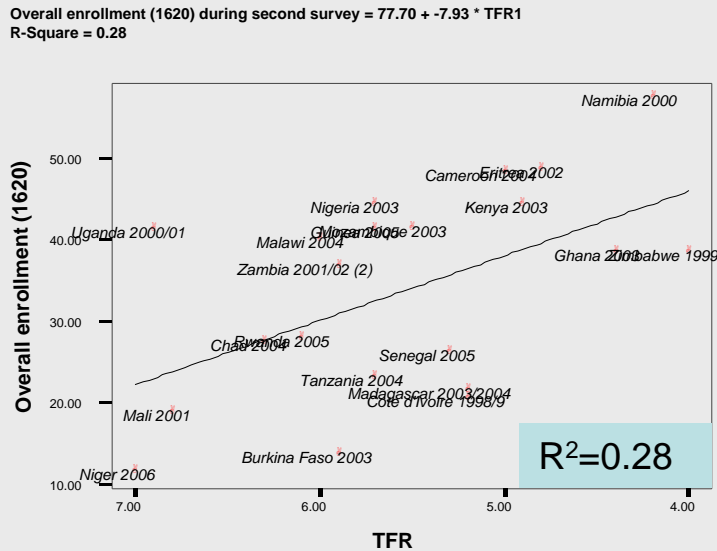
Overall enrollment

Gender parity in Enrollment

Ages 6-15



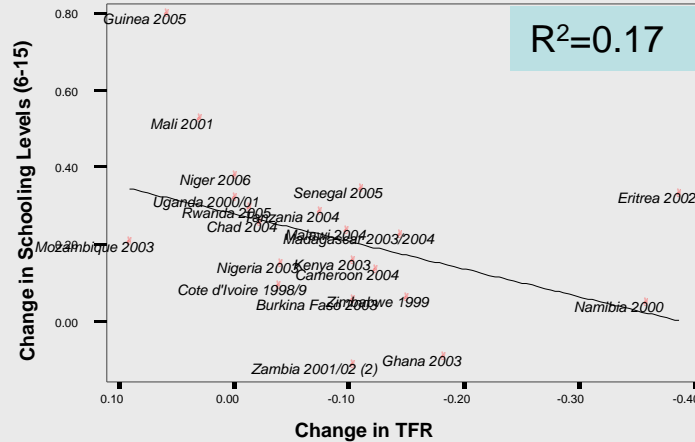
Ages 16-20



Macro-Level Evidence (II)

Overall enrollment

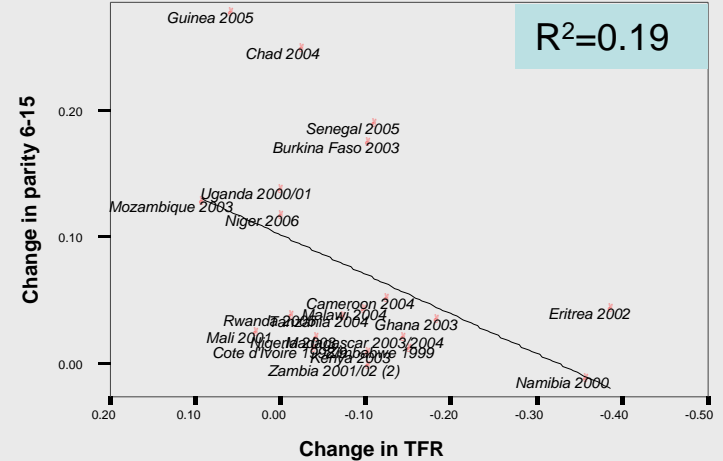
PRORATED CHANGE IN LEVELS OF SCHOOLING 6-15 = 0.28 + 0.72 * PROTFR
R-Square = 0.17



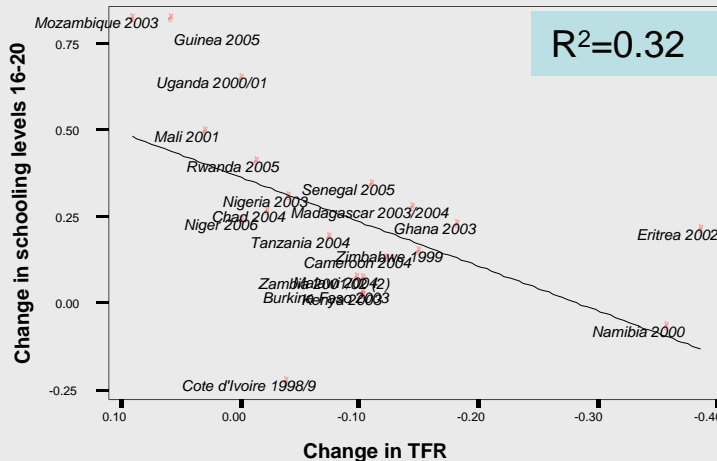
Ages 6-15

Gender parity in Enrollment

PRORATED CHANGE IN PARITY 6-15 = 0.10 + 0.31 * PROTFR
R-Square = 0.19

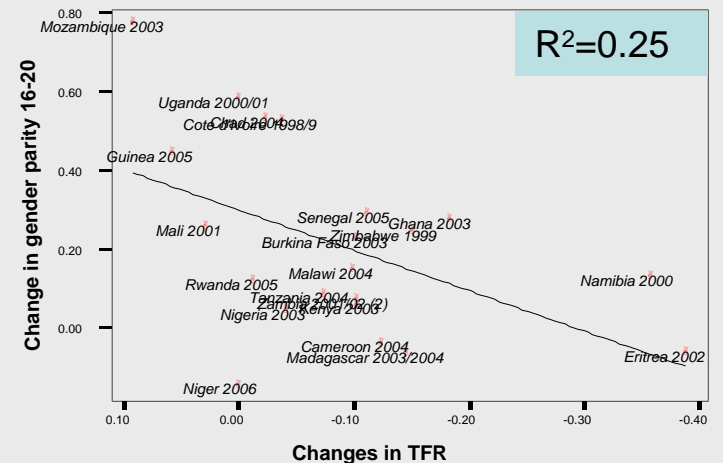


PRORATED CHANGE IN LEVELS OF SCHOOLING 16-20 = 0.36 + 1.28 * PROTFR
R-Square = 0.32



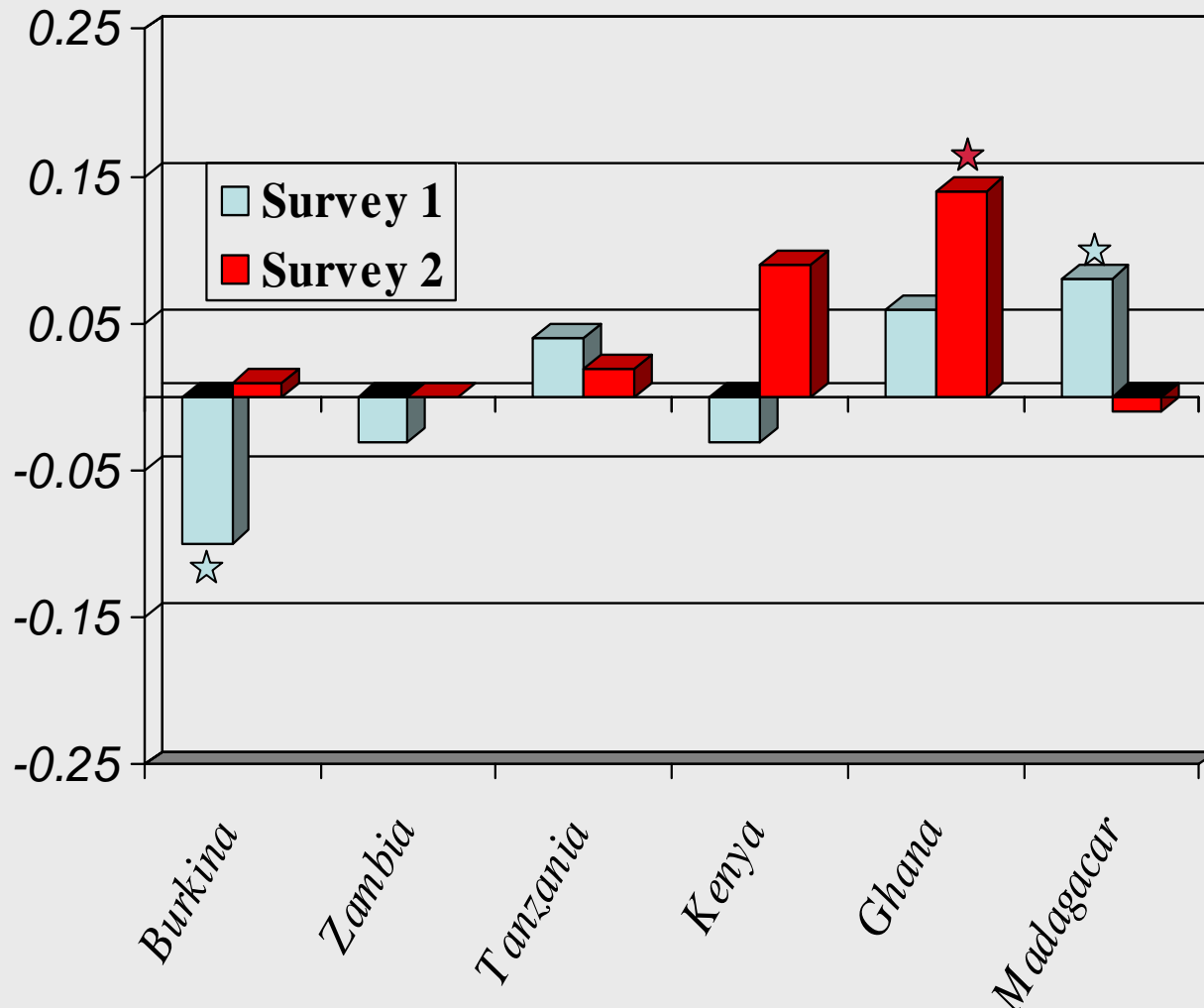
Ages 16-20

PRORATED CHANGE IN PARITY 16-20 = 0.30 + 1.03 * PROTFR
R-Square = 0.25



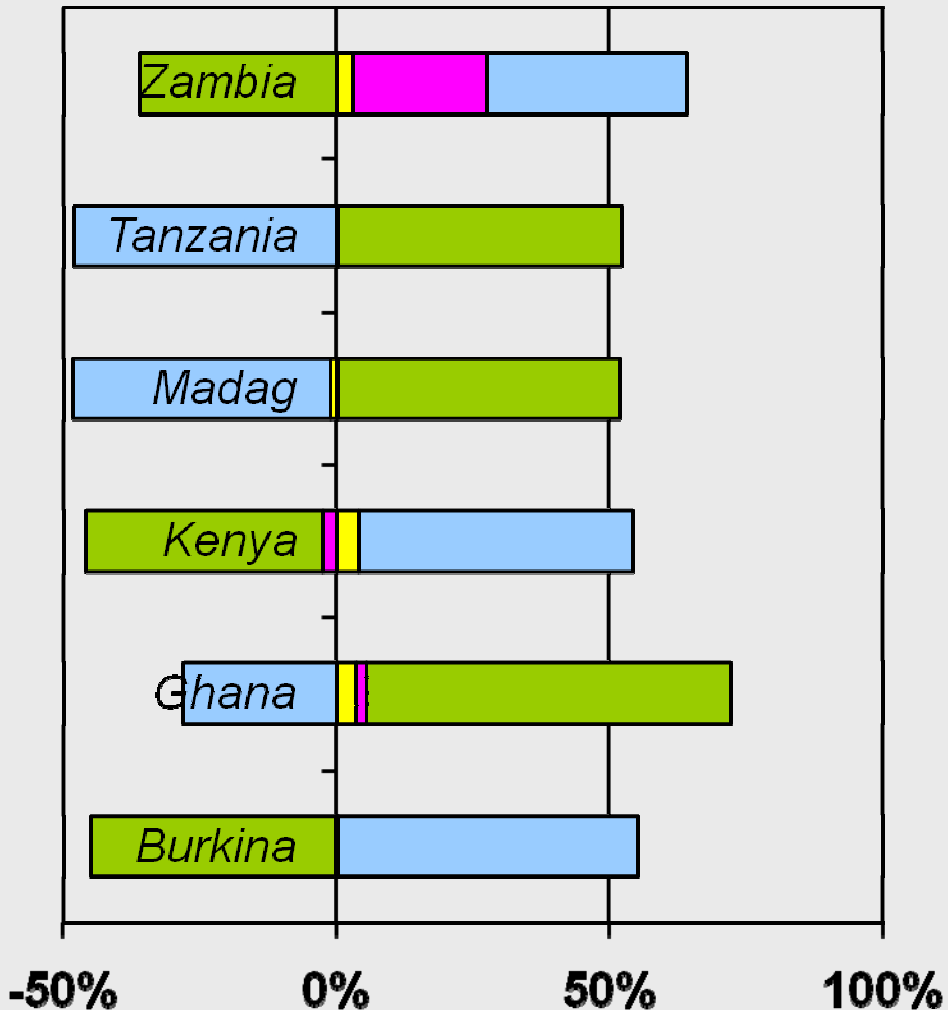
Micro-Level Evidence

Sibsize-related discrimination (inordinate effect of sibsize on female schooling)



Evidence from Decomposition

■ F size ■ S struct ■ Socioeco ■ Dilution



- The contributions of change in family size and structure are very small;
- Much of the change due to general socioeconomic change and **to change in dilution**;
- Failure to consider change in dilution coefficient → potentially large error.

Contextual Variability: Favorable Circumstances

- Large declines in fertility
- *Sibsize-related discrimination*
- *Increasing sibsize-related discrimination*
- Favorable changes in family structure
- Even fertility transitions
- Even (horizontal) gender convergence

Variation in dividends by sibsize related discrimination

Initial $\beta_s = 0.14$

Initial $\beta_s = 0.07$

