Who benefits from public services? Decomposing inequalities in Mozambique

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July 2017

Title

(1) Background

Expansion of public services in LDCs

Millennium Development Goals crystallised a focus on service delivery in developing countries.

Notable successes:

- 20pp increase in primary net enrolment in sub-Saharan Africa from 2000-2015
- Global under-five mortality rate declined by more than 50% (1990-2015)
- Maternal mortality rate declined by 45% worldwide (1990-2015)

Population averages hide distributional differences.

How equitable has this expansion been? In Mozambique?

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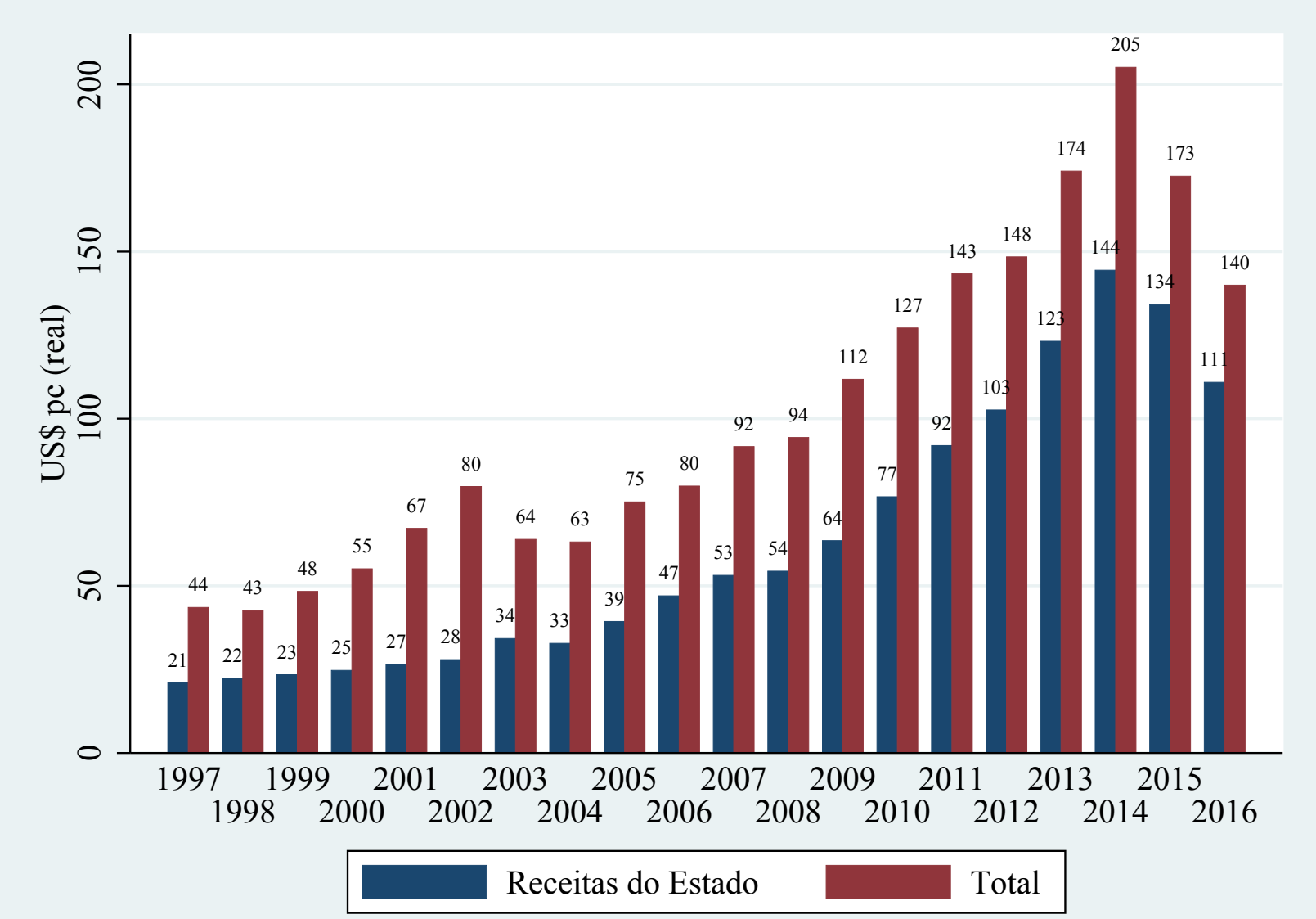
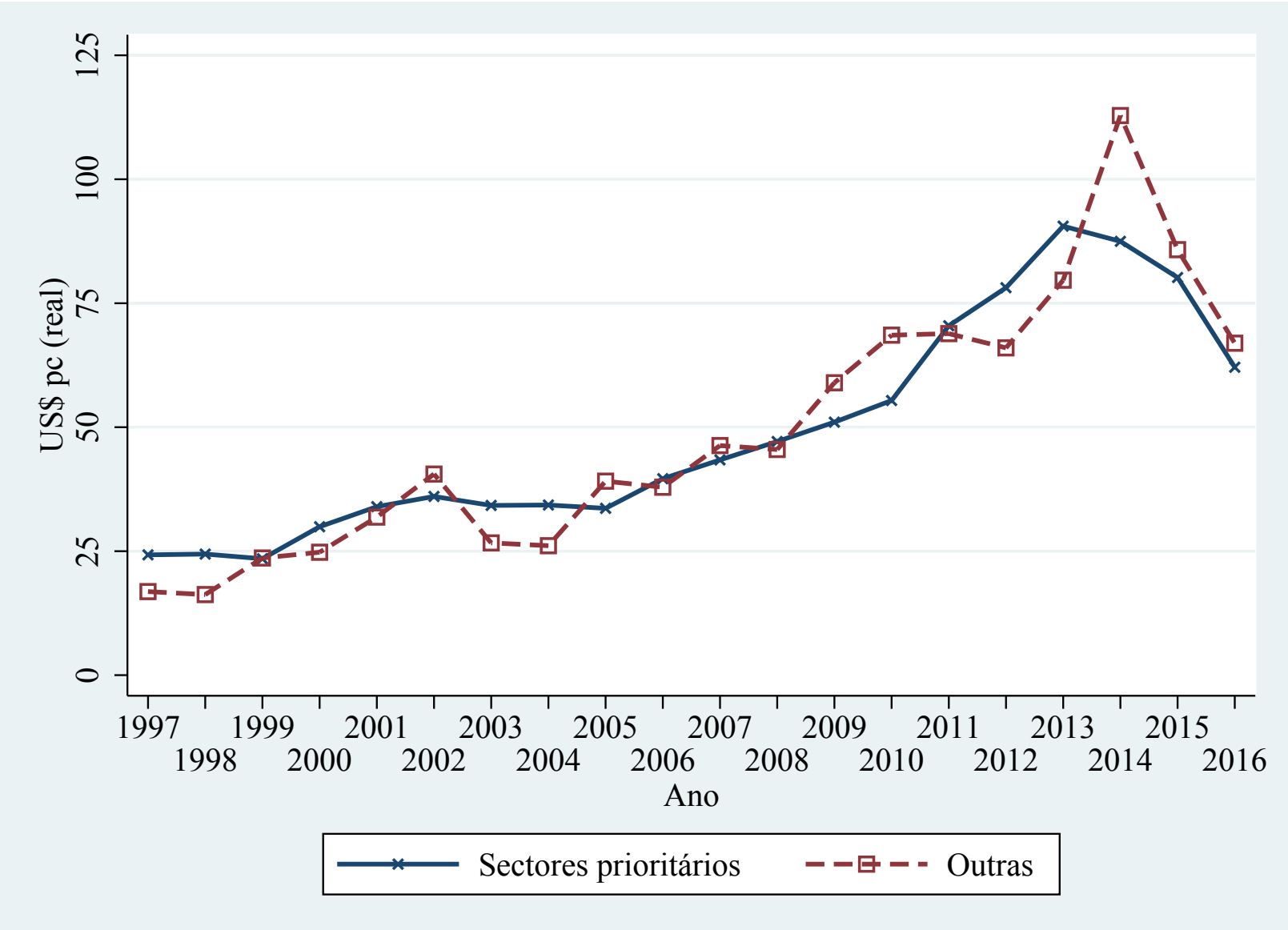
Mozambique: public sector expansion

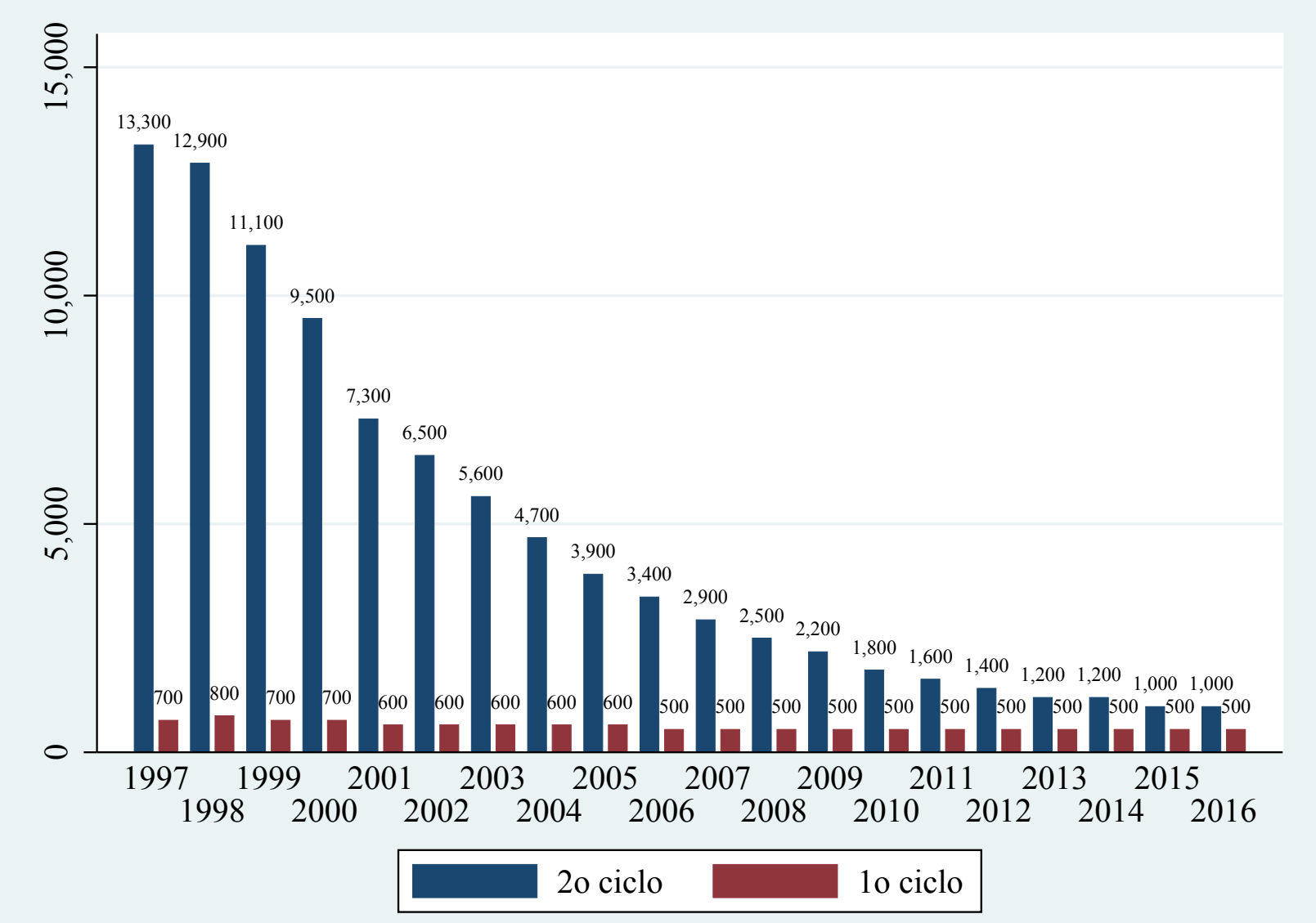


Mozambique: priority sector spending



Mozambique: educational output

Children of primary school age / no. schools



(2) Methodology

Framework

Evaluating equity in public services

Complex.

Public services are generally not pure public goods.

Most are **club goods** – they are excludable and somewhat rivalrous, BUT they generate positive externalities & their provision has high fixed costs

$\longrightarrow$ some kind of natural public monopoly, but effective access typically invokes individual opportunity costs

Services $\longrightarrow$ Access $\longrightarrow$ Usage $\longrightarrow$ End benefits

Benefits are mediated by individual choice and circumstance (e.g., income)

Inequalities in benefits/usage do not only reflect public policies.

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Metrics of inequality

Follow literature on measurement of health inequalities .

Absolute measures of inequality: invariant to an **equal increment** in the outcome (e.g., health) but not to an equi-proportionate change $\Longrightarrow$ 'leftist'

Relative measures of inequality: invariant to an **equi-proportionate change** in the outcome (e.g., health) but not to an equal increment $\Longrightarrow$ 'rightist'

Approach applies naturally to other domains – e.g., access/usage of public services.

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Family of slope inequality indexes

Slope inequality indexes (**SII**s) capture the extent to which the expected value of an outcome (e.g., access to clean water) increases with one's rank in the population distribution of private welfare.

Absolute SII: $y_{it} = \alpha_a + \beta_a \rho_{it} + \varepsilon_{it}$

Relative SII: $y_{it}/\bar{y}_t = \alpha_r + \beta_r \rho_{it} + \varepsilon_{it}$

... (helpful to index the relative SII to some base year).

For a simple binary outcome, the absolute slope (β_a) gives the increase in probability of obtaining the outcome if one moves from the lowest to the highest rank.

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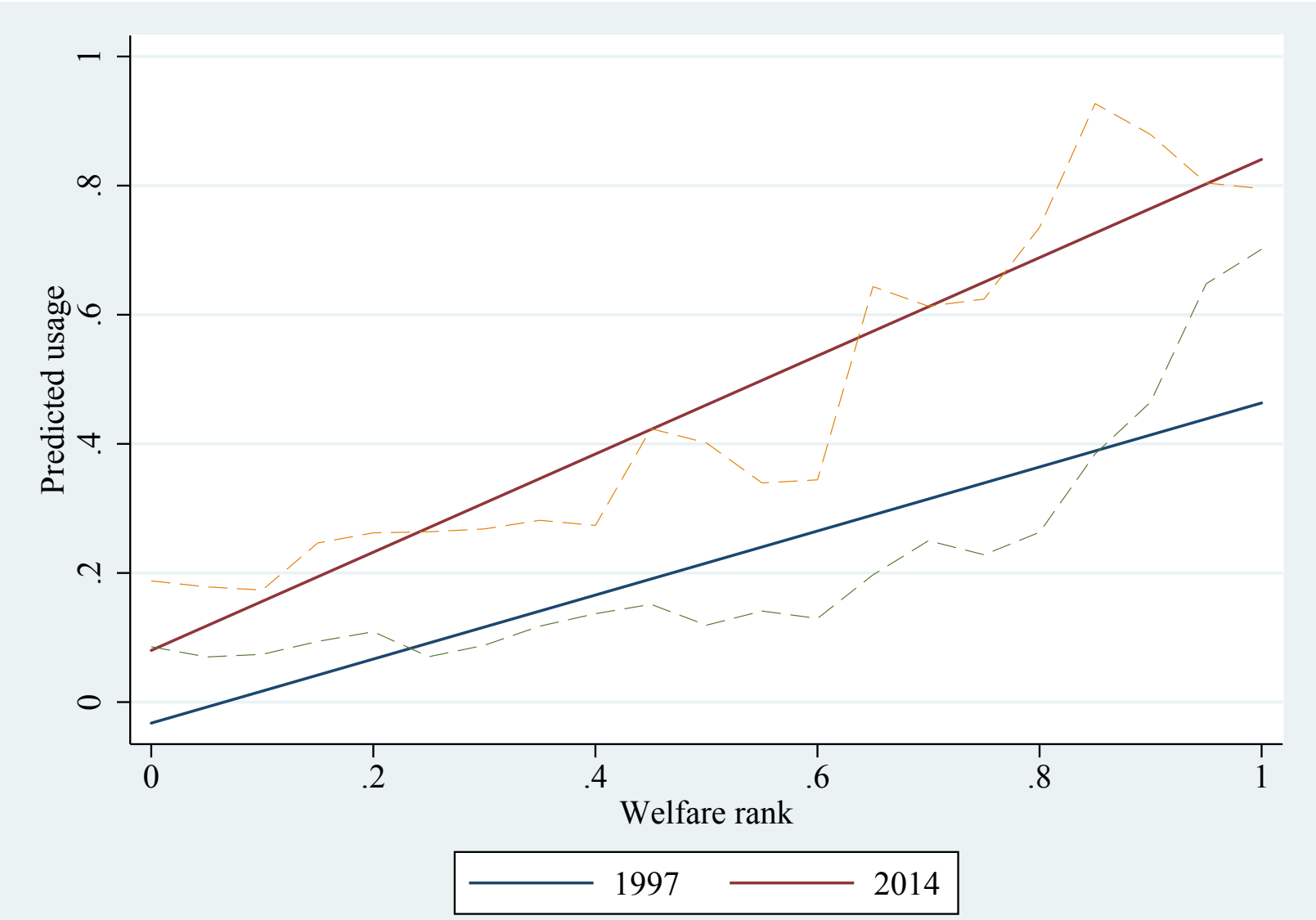
Example :– data for Mozambique



Inequality decomposition

The SII is of stand-alone interest.

But we can also identify the underlying composition of the SII:-

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\begin{aligned}
y_{it} &= \alpha + \gamma x_{it} + \epsilon_{it} \\
x_{it} &= \theta p_{it} + \nu_{it} \\
\Rightarrow y_{it} &= \alpha + \gamma\theta p_{it} + (\gamma\nu_{it} + \epsilon_{it}) \\
\Rightarrow \beta_{\mathsf{a}} &\equiv \gamma \times \theta \ \text{ iff } \mathsf{E}(p_{it}\epsilon_{it}) = 0 \\
&= \mathsf{MFX}_{xy} \times \mathsf{SII}_{x}
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Can be extended to multiple characteristics. Estimated via a iSURE approach to account for cross-correlation between x's.

Constitutes a modification/extension of the approach set out in Wagstaff et al., 2003.

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Application to household survey data in Mozambique.

Four surveys: 1997, 2002, 2008, 2014.

Welfare ranking: PCA index of private assets.

Outcomes:

- Does anyone in the household have a primary education?
- Does the household have access to clean water?
- Does the household have access to electricity?

$\rightarrow$ Composite PCA index [normalized: 0 – 1]

Decomposition: asset index, consumption, household size, location (rural, urban $\times$ North, Center, South).

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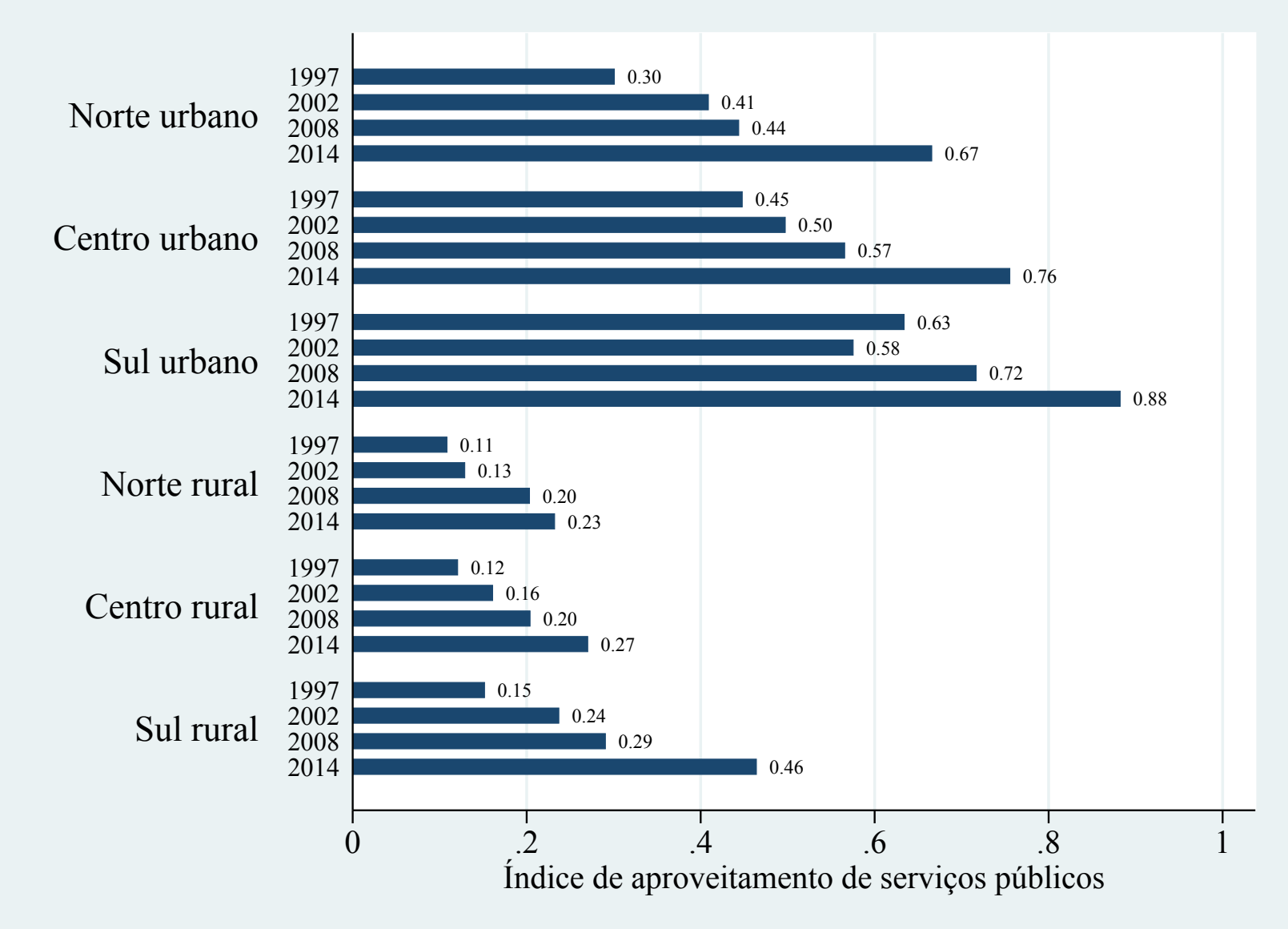
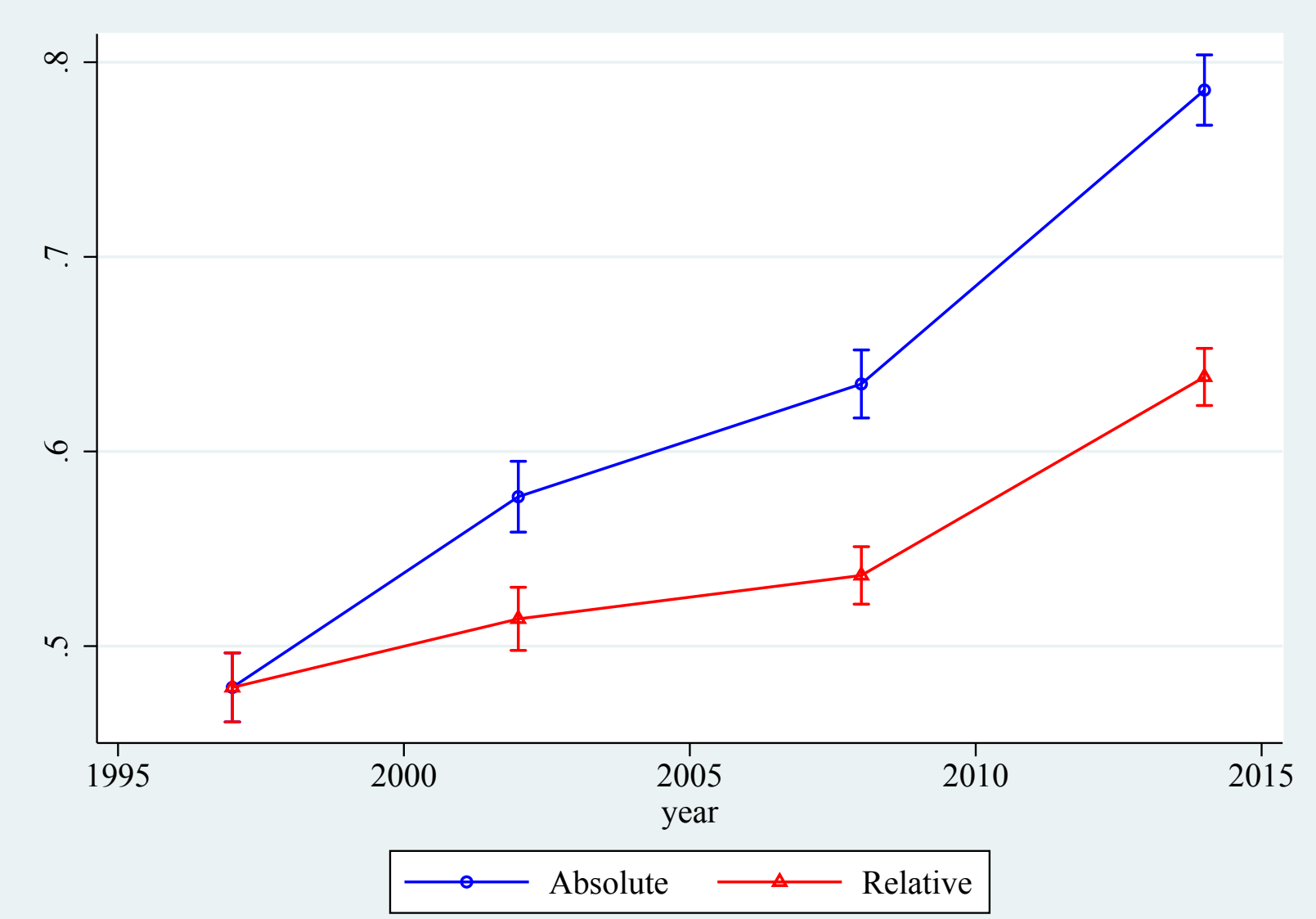
(3) Results

Large spatial differences in end benefits



Increasing trend in slope inequality indexes



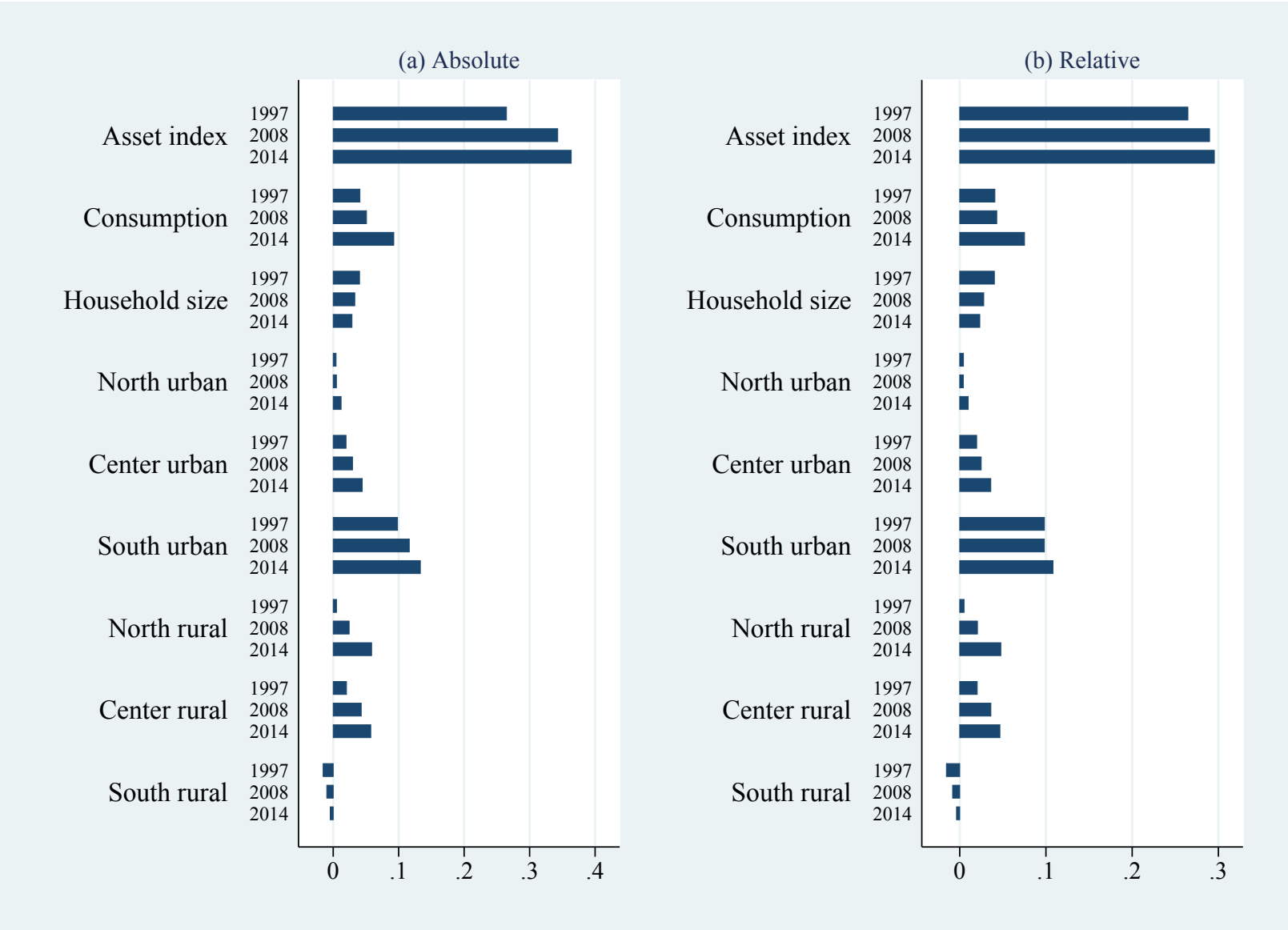
Decomposition of absolute SII

	Marginal effects			SIIs			Contributions		
	1997	2014	Δ	1997	2014	Δ	1997	2014	Δ
Asset index	0.28	0.32	0.04*	0.93	1.13	0.20*	0.26	0.36	0.10*
Consumption	0.06	0.08	0.02*	0.67	1.14	0.47*	0.04	0.09	0.05*
Household size	0.02	0.02	0.00*	2.60	1.68	-0.92*	0.04	0.03	-0.01*
North urban	0.15	0.23	0.08*	0.03	0.05	0.02*	0.00	0.01	0.01*
Center urban	0.19	0.22	0.04*	0.11	0.20	0.09*	0.02	0.04	0.02*
South urban	0.21	0.28	0.07*	0.48	0.48	0.00	0.10	0.13	0.03*
North rural	-0.07	-0.13	-0.07*	-0.08	-0.44	-0.36*	0.01	0.06	0.05*
Center rural	-0.03	-0.12	-0.10*	-0.74	-0.46	0.28*	0.02	0.06	0.04*
South rural	-0.08	-0.03	0.05*	0.20	0.17	-0.03*	-0.02	-0.00	0.01*
Overall	.	.	.	.	.	.	0.48	0.79	0.31*

Decomposition of relative SII

	Marginal effects			SIIs			Contributions		
	1997	2014	Δ	1997	2014	Δ	1997	2014	Δ
Asset index	0.28	0.29	0.01	0.93	1.01	0.08*	0.26	0.30	0.03*
Consumption	0.06	0.16	0.10*	0.67	0.46	-0.21*	0.04	0.08	0.03*
Household size	0.02	0.01	-0.00	2.60	1.65	-0.95*	0.04	0.02	-0.02*
North urban	0.15	0.24	0.09*	0.03	0.04	0.01	0.00	0.01	0.01*
Center urban	0.19	0.24	0.06*	0.11	0.15	0.04*	0.02	0.04	0.02*
South urban	0.21	0.24	0.03*	0.48	0.45	-0.03*	0.10	0.11	0.01*
North rural	-0.07	-0.11	-0.04*	-0.08	-0.45	-0.37*	0.01	0.05	0.04*
Center rural	-0.03	-0.10	-0.07*	-0.74	-0.47	0.27*	0.02	0.05	0.03*
South rural	-0.08	-0.02	0.06*	0.20	0.20	-0.00	-0.02	-0.00	0.01*
Overall	.	.	.	.	.	.	0.48	0.64	0.16*

Trends in contributions to SIIs



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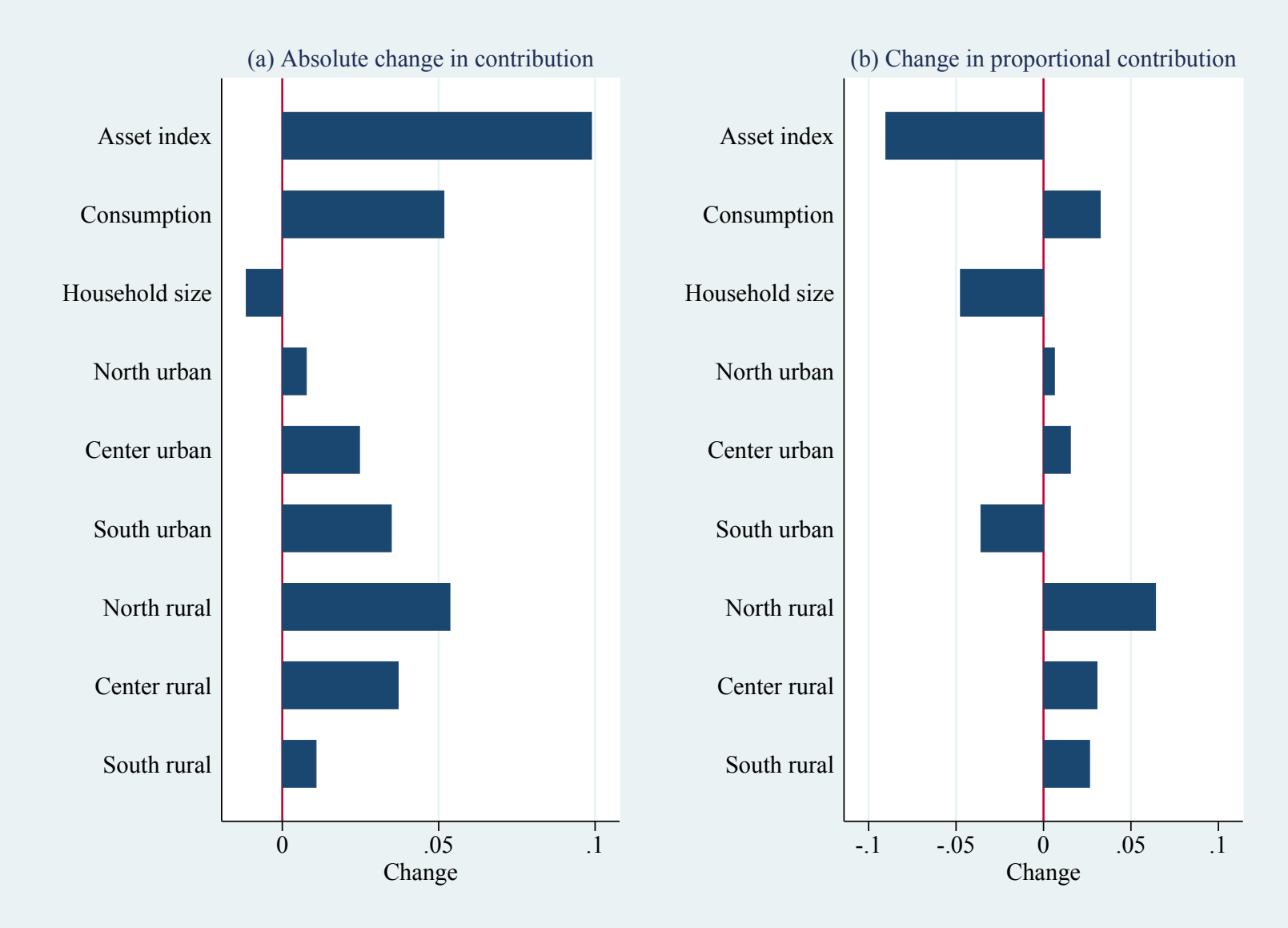

(4) Conclusion

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2. Decomposition assesses the role of income-related drivers
3. Evidence for Mozambique:
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   - Significant and persistent role of SES-related drivers
   - Spatial differences also important & worsening
   - South urban :– higher usage than expected due to SES
   - North rural :– lower usage than expected due to SES
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