

The Incidence of Fiscal Policy in Tanzania

presentation at
Kilimanjaro Hotel
Dar es Salaam

January 20, 2016

Stephen D. Younger
Flora Myamba
Kenneth Mdadila

This project has been made possible thanks to the generous support of the
Bill & Melinda Gates Foundation



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

Introduction

- What is an incidence analysis?
 - Who pays taxes, and who benefits from government spending?
 - Defined by population sub-groups, usually income-based
- Can do this for very specific budget items
 - e.g. CCT or tobacco excises
- Or the entire budget (more or <much> less)
 - Problem of public goods
 - Problem of survey information
- CEQ tries to do the latter, and provides useful information on the former, too.

Introduction

- Three big questions:
 - How much redistribution and poverty reduction is being accomplished through social spending, subsidies and taxes?
 - How progressive are revenue collection, subsidies, and government social spending? and
 - Within the limits of fiscal prudence, what could be done to increase redistribution and poverty reduction through changes in taxation and spending?
- *A caution on equity and efficiency*

Methods

- Data to describe the distribution of income come from HBS, 2011/12
- The CEQ income concepts (figure next slide)
- Note: we are not using the welfare variable that NBS uses in poverty analysis
- For each CEQ income concept, we calculate Gini coefficients and FGT poverty measures
- For each social expenditure and tax, we calculate concentration coefficients



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

CEQ Income Concepts



What's Included in the Study?

Taxes	Expenditures
<i>Direct Taxes</i>	<i>Direct Transfers</i>
PAYE	CCT (simulated)
Skills Development Levy	Assistance with school books, uniforms
Presumptive taxes (informal)	Assistance with bed nets
<i>Indirect Taxes</i>	Pensions* (simulated)
VAT	<i>Indirect Transfers</i>
Import duties	Electricity subsidies
Excises	Fertilizer subsidies
Petroleum products	<i>In-Kind Benefits</i>
Beverages	Public schooling (various levels)
Tobacco products	Public health services, inpatient
Communications services	Public health services, outpatient



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

First Main Result

How much redistribution and poverty reduction is being accomplished through social spending, subsidies and taxes?

	Poverty line: z=Tsh 36,482 per month	z=Tsh 26,085 per month					
		z=\$1.25 per day	z=\$2.50 per day	z=\$4.00 per day			
	Gini	Headcount index	Poverty Gap	Headcount index	Headcount index	Headcount index	Headcount index
Market Income plus Pensions	0.382	0.283	0.068	0.101	0.437	0.835	0.937
Market Income*	0.379	0.294	0.078	0.111	0.447	0.837	0.945
Gross Income	0.381	0.280	0.067	0.097	0.432	0.833	0.937
Net Market Income	0.358	0.285	0.069	0.101	0.441	0.845	0.947
Disposable Income	0.357	0.282	0.067	0.097	0.436	0.844	0.946
Disposable Income plus Indirect Subsidies	0.360	0.278	0.066	0.096	0.432	0.839	0.944
Disposable Income less Indirect Taxes	0.341	0.353	0.092	0.145	0.521	0.889	0.966
Consumable Income	0.345	0.348	0.090	0.144	0.515	0.883	0.963
Final Income	0.331	0.250	0.053	0.073	0.416	0.855	0.954

Note: Tsh poverty lines in per adult equivalents; US\$ poverty lines per capita



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

First Main Result

- Social expenditures in Tanzania do relatively little to redistribute income and reduce poverty
- Taxes, both direct and to a lesser extent indirect, reduce inequality
- Direct taxes do not fall on the poor, but indirect taxes do, increasing poverty
- In-kind benefits from public education and health expenditures lower poverty enough to offset the effect of indirect taxes



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

Overall Assessment

- Given other countries' experience, Tanzania does well: about 5 percentage points better than expected for inequality
 - Tanzania has low GDP per capita
 - Tanzania has low initial inequality
- Broadly speaking, both taxes and in-kind benefits help to reduce inequality
- On poverty, indirect taxes increase it, while in-kind benefits more than compensate that

More Detail

- Intuitively, for a tax or expenditure to have a big effect on the distribution of income, it must be:
 - well-targeted, and
 - large compared to incomes
- So let's dig into those two characteristics



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

How We Measure Inequality and “Targeting”

- Gini coefficient
 - Values from zero (perfect equality) to one (perfect inequality)
 - Practical ranges from about 0.25 (Slovenia, Scandinavia) to 0.70 (South Africa, Namibia, Brazil)
- Concentration coefficient
 - Values from negative one (completely concentrated in the poorest) to one (completely concentrated in the richest)
 - Practical ranges depend on the thing we are measuring

Standards for “Good” Concentration Coefficients

- For taxes, they should be greater than the Gini coefficient to be “progressive”
- For expenditures meant to redistribute, they should be (strongly) negative
 - This is true even though an expenditure that has a positive c.c. that is less than the Gini will be equalizing
- For expenditures meant to be universal, they should be close to zero

Concentration Coefficients

Taxes	Concentration Coefficient	Expenditures	Concentration Coefficient
<i>Direct Taxes</i>		<i>Direct Transfers</i>	
PAYE	0.91	CCT (simulated)	-0.50
Skills development levy	0.92	Food assistance, NFRA	0.05
Presumptive taxes (informal)	0.65	Assistance w/ bed nets	0.10
<i>Indirect Taxes</i>		Assistance w/ school uniforms	0.17
VAT	0.53	Assistance w/ school books	0.27
Import duties	0.38	<i>Indirect Transfers</i>	
Excises		Electricity subsidies	0.69
Gasoline	0.37	Fertilizer subsidies	0.12
Kerosene	0.28	<i>In-Kind Benefits</i>	
Lubricants and other fuels	0.57	Public schooling	
Communications services	0.59	Pre-primary	-0.12
Soft drinks	0.55	Primary	-0.08
Bottled water	0.76	Senior High School	0.14
Beer	0.59	Vocational training	0.45
Wine	0.87	Post-secondary	0.62
Spirits	0.49	Public health care	
Tobacco	0.34	Dispensaries, out-patient	0.01
		Dispensaries, in-patient	0.04
		Health centre/clinic, out-patient	0.07
		Health centre/clinic, in-patient	0.16
		Hospital, out-patient	0.21
		Hospital, in-patient	0.33
<i>Gini Coefficient for Market Income</i>	0.38		

Second Main Result

- Expenditures
 - Education is very progressive at lower levels, not at tertiary level
 - Vocational training is perhaps surprising
 - Health is almost evenly spread across the income distribution for basic services, but not hospitals
 - Electricity subsidy is regressive; fertilizer subsidy is almost evenly distributed
 - CCT (simulated) is extremely progressive
 - Other forms of quasi-cash assistance are not well-targeted to the poor
 - May reflect measurement error



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

Second Main Result

- Taxes

- Direct taxes (PAYE, SDL, and taxes paid by household business owners) are highly progressive
- VAT is more progressive than one would expect
- Import duties and petroleum excises are neutral
- Tobacco and kerosene duties are regressive
- The beverage excises are all progressive
- Communications services excise is progressive



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

Taxes in Tanzania

	amount (millions)	Comparable HBS 2011/12 Estimate	Share of total Government Revenue	Share of GDP	Included in CEQ analysis?
<i>Total Revenue and Grants</i>	8,695,951			21.1%	
<i>Taxes</i>	6,625,550		76.2%	16.1%	
<i>Direct Taxes</i>	2,430,208	1,262,396		5.9%	
Personal Income Tax (PAYE)	1,129,469	1,177,232	13.0%	2.7%	yes
Skills Development Levy	138,901	67,786	1.6%	0.3%	yes
Corporate Income Tax	751,687		8.6%	1.8%	no
Other Direct Taxes 1/	410,151	17,378	4.7%	1.0%	partial
<i>Indirect Taxes</i>	4,029,301		46.3%	9.8%	
VAT 2/	1,975,545	1,972,045	22.7%	4.8%	yes
Import Duties 2/	497,687	497,883	5.7%	1.2%	yes
<i>Excises</i>	1,419,383		16.3%	3.5%	
petroleum excises 2/	872,399	770,878	10.0%	2.1%	yes
communications services tax	116,237	148,737	1.3%	0.3%	yes
Bottled Water and Soft Drinks	34,293	27,192	0.4%	0.1%	yes
Beer	150,543	2,816	1.7%	0.4%	yes
Wine/Spirits/Konyagi	53,217	2,591	0.6%	0.1%	yes
Tobacco	78,502	6,566	0.9%	0.2%	yes
Other (imports)	101,706		1.2%	0.2%	no
Other	12,486		0.1%	0.0%	no
Other Indirect Taxes	100,084		1.2%	0.2%	no
<i>Social Insurance Withholding /3</i>	1,347,720	1,197,811	15.5%	3.3%	yes
<i>Non-Tax Revenues</i>	43,091		0.5%	0.1%	no
<i>LGA Revenues</i>	195,525		2.2%	0.5%	no
<i>Grants</i>	2,027,309		23.3%	4.9%	no

NOTE: Share of Government Revenue Included in Analysis:

58.0%

NOTE: Share of GDP Included in Analysis:

12.3%

Expenditures in Tanzania

	amount (millions)	Comparable HBS 2011/12 Estimate	Share of total Government Spending	Share of GDP	Included in CEQ analysis?
<i>Total Expenditure</i>	<i>12,902,764</i>			<i>31.37%</i>	
<i>Social Spending</i>	<i>3,062,712</i>		23.7%	7.45%	
Social Protection	59,925		0.5%	0.15%	
Social Assistance of which					
Conditional or Unconditional Cash Transfers	540		0.0%	0.00%	no
Noncontributory Pensions	-				
Near Cash Transfers (Food, School Uniforms, etc.)	37,800	26,525	0.3%	0.09%	partial
Other			0.0%	0.00%	
Social Insurance of which 3/	957,645		7.4%	2.33%	
Old-Age Pensions	943,501	957,428	7.3%	2.29%	yes
<i>Education of which</i>	<i>1,891,092</i>		14.7%	4.60%	
Pre-school	-	95,778			
Primary	752,817	1,051,832	5.8%	1.83%	yes
Secondary	386,994	409,279	3.0%	0.94%	yes
Post-secondary non-tertiary and vocational	44,177	41,865	0.3%	0.11%	yes
Tertiary	573,075	416,630	4.4%	1.39%	yes
<i>Health of which</i>	<i>643,150</i>	<i>607,868</i>	5.0%	1.56%	
Contributory	-				
Noncontributory	643,150	607,868	5.0%	1.56%	yes
<i>Housing & Urban of which</i>	<i>6,392</i>		0.0%	0.02%	no
Housing	6,392		0.0%	0.02%	no
Subsidies of which				1.15%	
Energy of which	341,096		2.6%	0.83%	
Electricity	185,904	262,554	1.4%	0.45%	yes
Fuel	155,192		1.2%	0.38%	no
Food	28,500		0.2%	0.07%	yes
On Inputs for Agriculture (NAIVS)	103,500	50,962	0.8%	0.25%	yes
<i>Infrastructure of which</i>	<i>2,783,558</i>		21.6%	6.77%	no
Water & Sanitation	477,066		3.7%	1.16%	no
Rural Roads	2,306,492		17.9%	5.61%	no
Interest	1,576,800		12.2%	3.83%	no
	0				
NOTE: Share of Government Spending Included in Analysis:			20.2%		
NOTE: Share of GDP Included in Analysis:				6.3%	

How Does Tanzania Compare to Other Countries?

	Ethiopia (2011)	Tanzania (2012)	Ghana (2013) /1	Bolivia (2009)	Guatemala (2010)	Armenia (2011)	El Salvador (2011)	Indonesia (2012) 1/	South Africa (2010) 2/	Average
GNI per capita (2011 PPP)	\$1,163	\$2,201	\$3,737	\$5,090	\$6,474	\$7,045	\$7,389	\$9,017	\$11,833	\$5,994
% of GDP										
Direct Taxes	3.9%	5.9%	6.7%	5.7%	3.3%	5.2%	5.2%	5.6%	14.3%	6.2%
Indirect and Other Taxes	7.8%	9.8%	7.8%	21.1%	8.9%	11.9%	10.3%	6.3%	12.8%	10.7%
Cash and Near-cash Transfers	1.3%	0.3%	0.2%	2.0%	0.5%	2.5%	1.4%	0.4%	3.8%	1.4%
Education Spending	4.6%	4.6%	5.7%	8.3%	2.6%	3.5%	2.9%	3.4%	7.0%	4.7%
Health Spending	1.2%	1.6%	1.7%	3.6%	2.4%	1.7%	4.3%	0.9%	4.1%	2.4%
Gini, Market Income										
	0.32	0.38	0.44	0.50	0.55	0.47	0.44	0.39	0.77	0.47
Concentration Coefficients										
Direct Taxes	0.60	0.91	0.73	n.a.	0.85	0.62	0.82	n.a.	0.90	0.77
Indirect and Other Taxes	0.37	0.47	0.44	0.37	0.43	0.38	0.42	0.35	0.69	0.44
Cash and Near-cash Transfers	-0.37	0.10	-0.37	-0.07	-0.31	-0.30	-0.27	-0.25	-0.27	-0.23
Education										
Pre-primary	n.a.	-0.12	-0.34	-0.21	-0.10	-0.05	-0.20	n.a.	-0.11	-0.16
Primary	-0.03	-0.08	-0.27	-0.25	-0.18	-0.18	-0.22	-0.08	-0.19	-0.16
Secondary	0.27	0.14	0.01	-0.12	0.03	-0.04	0.02	...	-0.12	0.02
Tertiary	0.41	0.62	0.62	0.30	0.59	0.25	0.44	0.47	0.50	0.47
Health	0.07	0.18	0.04	-0.04	0.18	0.01	0.12	0.12	-0.06	0.07
Indirect Subsidies	0.40	0.59	0.43	0.37	0.10	n.a.	n.a.	0.34	...	0.37

A Note on Coverage

- “Coverage” measures the share of the target population that a particular expenditure actually reaches or benefits
- This is a way to measure targeting of an expenditure
 - Errors of exclusion
 - Errors of inclusion
- Different for each expenditure
- Not the same concept as “incidence”

Coverage of Social Spending

		\$1.25< y	\$2.50< y	\$4.00< y	
		y<\$1.25	<\$2.50	<\$4.00	<\$10.00
					\$10.00<y
Education					
	Pre-school, public	0.15	0.13	0.14	0.10
	Pre-school	0.16	0.17	0.24	0.24
	Primary, public	0.68	0.77	0.76	0.63
	Primary	0.69	0.80	0.82	0.86
	Secondary, Public	0.23	0.33	0.38	0.38
	Secondary	0.24	0.39	0.51	0.58
Health					
	Hospital	0.03	0.06	0.08	0.11
	Hospital, public	0.02	0.03	0.04	0.07
	Center	0.02	0.03	0.03	0.03
	Center, public	0.01	0.02	0.02	0.02
	Dispensary	0.05	0.06	0.07	0.05
	Dispensary, public	0.05	0.05	0.05	0.03
Social Security					
	Pension	0.00	0.01	0.02	0.03
Infrastructure					
	Electric mains	0.04	0.16	0.41	0.60
	Piped water or borehole	0.33	0.41	0.59	0.64

Results – Coverage

- Education coverage
 - NOTE: these are not GERs or NERs
 - Coverage is less-than complete at primary level and drops off considerably at higher levels
 - Note the heavy use of private schools in the upper quintiles
- Health coverage
 - More difficult to judge adequacy
 - Note the heavy use of hospitals relative to other services
- Old-age pensions coverage
 - Very limited, even among the highest quintile
- Note the inequity of access to electricity

Poverty Status Transitions

Market Income groups	y < \$1.25	\$1.25 <= y < \$2.50	\$2.50 <= y < \$4.00	\$4.00 <= y < \$10.00	y >= \$10.00	Percent of Population	Average Market Income (Tsh per mo)
Disposable Income groups							
y < \$1.25	99%	1%	0%	0%	0%	44%	25,492
\$1.25 <= y < \$2.50	1%	99%	0%	0%	0%	40%	49,911
\$2.50 <= y < \$4.00	0%	8%	92%	0%	0%	10%	89,585
\$4.00 <= y < \$10.00	0%	4%	13%	83%	0%	5%	163,444
>= \$10.00	0%	3%	1%	32%	65%	1%	512,202
Consumable Income groups							
y < \$1.25	100%	0%	0%	0%	0%	44%	25,492
\$1.25 <= y < \$2.50	19%	80%	0%	0%	0%	40%	49,911
\$2.50 <= y < \$4.00	0%	44%	56%	0%	0%	10%	89,585
\$4.00 <= y < \$10.00	0%	6%	41%	53%	0%	5%	163,444
>= \$10.00	1%	2%	2%	57%	39%	1%	512,202
Final Income groups							
y < \$1.25	90%	10%	0%	0%	0%	44%	25,492
\$1.25 <= y < \$2.50	6%	91%	3%	0%	0%	40%	49,911
\$2.50 <= y < \$4.00	0%	29%	67%	4%	0%	10%	89,585
\$4.00 <= y < \$10.00	0%	5%	35%	60%	0%	5%	163,444
>= \$10.00	1%	1%	2%	53%	44%	1%	512,202



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

Simulating Policy Changes

- The analysis is descriptive of the status quo as of 2011/12, the time of the HBS
- But we can use it to simulate the first-order effects of policy changes
- Some examples follow:
 - Switch from import duties to direct taxes
 - Eliminate electricity subsidies
 - Expand the CCT coverage
 - Institute a social pension

Change to Direct Taxation

Simulation: Shift *All* Import Duties to PAYE

Change in:	Extreme	Poverty	Poverty	Poverty	Gini
	Headcount				
Consumable Income	-0.005	-0.007	-0.002	-0.004	-0.004
Final Income	-0.003	-0.007	-0.001	-0.003	-0.003



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

Eliminating Electricity Subsidy

Simulation: Elimination the Electricity Subsidy and Use the Resources to Expand CCT

Change in:		Simulation			
		(1)	(2)	(3)	(4)
Poverty Headcount	Disposable Income			-0.0140	-0.0022
	Consumable Income	0.0029	0.0024	-0.0148	-0.0004
	Final Income	0.0019	0.0013	-0.0163	-0.0031
Gini	Disposable Income			-0.0068	-0.0018
	Consumable Income	-0.0036	-0.0020	-0.0108	-0.0055
	Final Income	-0.0034	-0.0019	-0.0094	-0.0050
Budgetary savings (% of GDP):		0.43%	0.27%	0.00%	0.34%

(1) Eliminates the Electricity Subsidy with no compensation

(2) Eliminates subsidy except for lifeline tariff for first 50kwh, which is held constant.

(3) Eliminates electricity subsidy and uses all the funds to expand CCT coverage by raising PMT threshold

(4) Eliminates electricity subsidy and uses enough funds to expand CCT to leave poverty roughly unchanged.



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

Expanding CCT

Simulation: Expand CCT in various ways, using increased VAT to pay for it

		Simulation		
Change in:		(1)	(2)	(3)
Poverty Headcount	Disposable Income			-0.0236
	Consumable Income	-0.0104	-0.0138	-0.0146
	Final Income	-0.0117	-0.0159	-0.0191
Gini	Disposable Income			-0.0087
	Consumable Income	-0.0063	-0.0094	-0.0108
	Final Income	-0.0053	-0.0080	-0.0095
Note: Scaling Factor		0.55	1.00	1.00

- (1) Expands CCT to all eligible persons, then scales benefits down so the total CCT expenditure is 0.5% of GDP
- (2) Expands CCT at current benefit rates to the poorest eligible people according to the proxy means test until total CCT payments are 0.5% of GDP.
- (3) Expands CCT at current benefit rates to the poorest people regardless of VC/elderly according to the proxy means test until total CCT payments are 0.5% of GDP.

Establish a Social Pension

Simulation: Establish a social pension, with and without VAT to fund it

Change in:		Simulation	
		(1)	(2)
Poverty Headcount	Disposable Income		
	Consumable Income	-0.0048	-0.0134
	Final Income	-0.0069	-0.0123
Gini	Disposable Income		
	Consumable Income	-0.0059	-0.0037
	Final Income	-0.0054	-0.0032
Note: Net cost, %GDP		0.0%	0.5%

(1) Social pension of Tsh 11,000 per month for all people ≥ 60 years, financed with increased VAT

(2) Social pension of Tsh 11,000 per month for all people ≥ 60 years, not financed



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu

Conclusions

- Tanzania does quite a lot to redistribute resources given its relative poverty and initial equality
- Indirect taxes increase poverty substantially, while direct taxes do not
- In-kind benefits of education and health expenditure reduce poverty substantially

Conclusions

- Most taxes in Tanzania are well-targeted to the better off
 - PAYE
 - Presumptive taxes on small businesses
 - VAT
 - Most excises (beer, wine, soft drinks, bottled water, communications services)
- But also some poorly-targeted ones
 - Tobacco
 - Kerosene
- And some neutral ones
 - Petroleum excises
 - Import duties

Conclusions

- Tanzania has relatively few well-targeted expenditures
 - Public primary school
 - CCT (with a caveat)
- And some very poorly targeted ones
 - Electricity subsidies
 - Tertiary education

Conclusions

- Third big question:
 - Within the limits of fiscal prudence, what could be done to increase redistribution and poverty reduction through changes in taxation and spending?
- First, let's remember my caution from the introduction
 - This is about equity
 - But efficiency matters, too

Conclusions

- There are some attractive options from an equity perspective
 - eliminate electricity subsidies
 - expand the CCT
 - reduce kerosene excises
 - increase some progressive excises
 - expand coverage and improve the quality of public primary (and perhaps secondary) education

Asante Sana



CEQ INSTITUTE
COMMITMENT TO EQUITY

Tulane University



ITHACA COLLEGE

ithaca.edu